

# POST-CONSTRUCTION SURFACE SEDIMENT MONITORING—YEAR 0

Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project Boeing Plant 2, Seattle/Tukwila, Washington

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## POST-CONSTRUCTION SURFACE SEDIMENT MONITORING—YEAR 0

Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project Boeing Plant 2, Seattle/Tukwila, Washington

#### 1.0 INTRODUCTION

This report documents the results of Year 0 sediment quality monitoring conducted immediately after construction of the Duwamish Sediment Other Area (DSOA) and Southwest Bank Corrective Measure and Habitat Project was completed in March 2015. The monitoring program is being conducted to achieve two main objectives: (1) determine if recontamination of the clean, post-construction sediment surface is occurring; and (2) if recontamination is occurring, determine if the contaminants originate from on- or off-site sources.

Potential on-site sources are groundwater and stormwater, which are being monitored through the ongoing uplands Resource Conservation and Recovery Act (RCRA) process. No specific monitoring of groundwater is being conducted as part of this plan; however, sediments adjacent to stormwater outfalls in the Plant 2 vicinity are being sampled as part of sediment monitoring. Off-site sources include, but are not limited to, releases or resuspension of sediments and subsequent transport and deposition of those sediments from locations either upstream or downstream of the project area.

As described in the *Post-Construction Surface Sediment Monitoring Work Plan* (Work Plan; AMEC et al. 2014), post-construction monitoring was to be conducted immediately upon completion of all dredging, shoreline construction, and final backfilling to grade (Year 0). Additional monitoring will be conducted at years 1, 3, 5, 7, and 10 post-construction.

#### 2.0 METHODS

Sediment samples were collected for chemical analysis from 36 sampling locations on the post-construction surface, as described in the work plan (AMEC et al. 2014).

#### 2.1 SAMPLING DESIGN

The sampling design was a judgmental sampling design (i.e., sample locations were selected based on best professional judgment). The project area includes the in-water dredging areas (including Slip 4), the North and South Shoreline Areas below approximately +4 feet mean lower low water (MLLW), and the North and South Shoreline Areas above approximately +4 feet MLLW (Figure 1). The North and South Shoreline Areas above approximately +5 feet MLLW were planted with marsh

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vegetation as part of restoration/creation of shoreline habitat within the DSOA and Southwest Bank area.

The 36 proposed sampling locations were selected to provide good spatial coverage of the post-construction surface and to include sampling points near stormwater outfalls (Figure 1). Sampling locations were stratified into five distinct groups based on the elevation of the post-construction surface.

- Shoreline area samples at approximately 7 feet MLLW;
- Shoreline area samples at approximately 4 feet MLLW;
- In-water work area sample locations above -5 feet MLLW and below +4 feet MLLW;
- In-water dredging area sample locations below -5 feet MLLW; and
- Stormwater outfall locations.

The elevations of the proposed sampling points were estimated using the design drawings for the designed final finish grade.

Elevation ranges for the stratified sampling groups were selected based on the mechanism and sources of potential off-site contaminants. Potential mechanisms of recontamination include releases, subsequent transport, and redeposition of contaminants from either upstream or downstream sources within the Duwamish Waterway. Transport of material from off-site sources in the waterway is stratified by water depth:

- Releases from upstream sources can potentially move downstream within the surface freshwater lens, and
- Releases within the tidally driven salt wedge can result in either upstream or downstream transport of contaminants.

The mechanisms influencing the sediment transport processes and the sources of potential contamination differ above and below the halocline (defined as the transition between the fresh, low-salinity surface layers and the higher salinity salt wedge). A majority of the water flow above the halocline in the Duwamish Waterway adjacent to Plant 2 is governed by surface freshwater flow, and sediment transport is predominantly downstream. The area below the halocline is predominately exposed to tidally driven flows that can result in either downstream or upstream water movement. Therefore, for monitoring purposes, the project area was divided into two strata, one above and one below the halocline.

The depth (or elevation) of the halocline depends primarily on the tidal height, tidal cycle, and river discharge rate. The elevation of the halocline in the vicinity of Plant 2 is estimated to be at approximately -5 feet MLLW, based on information collected by King County at the South Park Bridge between February 2006 and October 2011 (King County 2011). As such, the project area was divided into two subareas or strata (above -5 feet MLLW and below -5 feet MLLW; Figure 1) for monitoring purposes.

To meet the monitoring requirements of the Natural Resource Trustees, additional monitoring stations were established in the upper intertidal area within the North and South Shoreline Habitat Areas at an elevation of approximately +7 feet MLLW (Figure 1).

Finally, additional sampling stations were established adjacent to stormwater outfalls in the Duwamish Waterway and in Slip 4.

#### 2.2 SAMPLE COLLECTION

Sediment sample collection followed the procedures specified in the Work Plan.

Samples collected in the areas at +4 feet MLLW and below, as shown on Figure 1, were collected using a 0.2-square-meter (m²) stainless-steel powered grab sampler. These samples were collected within approximately 1 to 2 months of construction completion.

Samples collected at +7 feet MLLW, as shown on Figure 1, were collected by hand using stainless-steel spoons. Since the construction of the upper portion of the shoreline was completed in fall of 2013, these samples were collected approximately 1.5 years after construction completion.

#### 2.3 ANALYTICAL LABORATORY

The analytical methods for sediment samples followed the requirements of the Work Plan and the *Final Construction Quality Assurance Project Plan* (AMEC et al. 2013). All samples were analyzed for the Sediment Management Standards (SMS; Washington Administrative Code 173-204) analytes, which include metals, polycyclic aromatic hydrocarbons (PAHs; low-molecular-weight PAHs [LPAHs] and high-molecular-weight PAHs [HPAHs]), chlorinated benzenes, phthalate esters, miscellaneous non-ionizable organic compounds, ionizable organic compounds, polychlorinated biphenyls (PCBs), and total organic carbon (TOC). Selected samples were also analyzed for dioxin/furans and grain size as described in the Work Plan.

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#### 3.0 RESULTS

#### 3.1 SAMPLE COLLECTION

The Year 0 samples were collected at 36 locations; in addition, field duplicate samples were collected at four of the sample locations. A list of samples and coordinates of sampling locations are presented in Table 1, and approximate sampling locations are shown on Figure 1. At each sample location, the top 10 centimeters (cm) of sediment was collected for analytical chemistry. Samples that were collected for only SMS analysis were placed directly into a single sample container; these samples were homogenized at the analytical laboratory. Samples collected for analysis of SMS analytes and dioxin/furans or grain-size analysis were homogenized in the field before being placed into the sample containers.

#### 3.2 SAMPLE PHYSICAL CHARACTERISTICS

The qualitative sample characteristics forms and photographs of the samples are provided in Attachment A.

There were 28 samples collected below elevation +4 feet MLLW, including six outfall samples. All samples consisted of fine to medium sand. Silt was observed on the surface of some of the samples (apparently recently deposited material) as described below:

- 15 samples had no silt layer present on the surface of the sample,
- 10 samples had a trace of silt present on the surface of the sample,
- 2 samples had an approximately 0.5-cm-thick layer of silt on the surface of the sample, and
- One sample had a 2- to 3-cm-thick layer of silt present on the surface of the sample (SD-PCM030).

Six samples were collected along the shoreline area at approximately +4 feet MLLW. Two of the samples were located in the north shoreline embayment (SD-PCM020 and SD-PCM021) and consisted primarily of silt. The embayment is a depositional area where construction was completed in fall 2013. The remaining four shoreline area samples collected at +4 feet MLLW consisted of fine to medium sand with no visible silt on the surface of the samples.

Six samples were collected along the shoreline at an elevation of approximately +7 feet MLLW. Two of the samples were located in the north shoreline embayment (SD-PCM031 and SD-PCM032) and the samples consisted predominantly of silt. As stated above, the north shoreline embayment is a depositional area where construction was completed in fall 2013. The other four shoreline sample locations consisted of fine to medium sand with no visible silt on the surface of the samples.

#### 3.3 SEDIMENT CHEMISTRY

The chain-of-custody forms for the samples that were analyzed are provided in Attachment B. The results of the SMS analyses are presented in Table 2, dioxin/furan analyses are presented in Table 3, and grain-size analyses are presented in Table 4. The frequency of detection of the analytes are presented in Table 5.

#### 3.3.1 Sediment Management Standards Analytes

#### 3.3.1.1 Metals

Metals were analyzed in 40 samples, and all detected metals concentrations were well below the Washington Sediment Quality Standards (SQS; Table 2). Arsenic, chromium, copper, and zinc were detected in all the samples, and cadmium was detected in about one-half of the samples. Lead and mercury were detected in less than one-quarter of the samples, and silver was not detected.

#### 3.3.1.2 PAHs

PAHs were analyzed in 40 samples, and all detected concentrations were well below the SQS (Table 2). PAHs were detected in 15 of the 40 samples. The most frequently detected PAHs were fluoranthene, pyrene, and dibenzo[a,h]anthracene (9 of 40, 8 of 40, and 8 of 40, respectively). Naphthalene, acenaphthylene, acenaphthene, fluorene, and 2-methylnaphthalene were detected in two or fewer of the samples (Table 5).

#### 3.3.1.3 Chlorinated Benzenes

Chlorinated benzenes were analyzed in 40 samples, and the detected concentrations were well below the SQS (Table 2). Chlorinated benzenes were detected in four or fewer of the samples (Table 5).

#### 3.3.1.4 Phthalate Esters

Phthalates were analyzed in 40 samples, and all detected concentrations were below the SQS (Table 2). All phthalates analyzed were detected in five or fewer samples, except butyl benzyl phthalate, which was detected in 12 of the 40 samples (Table 5).

#### 3.3.1.5 Miscellaneous Non-Ionizable Organic Compounds

Miscellaneous non-ionizable organic compounds were analyzed in 40 samples, and the analyzed constituents were detected in three or fewer samples (Table 2 and Table 5). Concentrations of all detected compounds were below the SQS.

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#### 3.3.1.6 Ionizable Organic Compounds

lonizable organic compounds were analyzed in 40 samples (Table 2). Phenol and benzoic acid were the most detected of the ionizable organic compounds (Table 5). Phenol was detected in 11 samples, and one sample with a concentration 570 micrograms per kilogram ( $\mu$ g/kg; SD-PCM032) exceeded the SQS of 420  $\mu$ g/kg. Benzoic acid was detected in six samples, and three samples (680  $\mu$ g/kg [SD-PCM031], 1,300  $\mu$ g/kg [SD-PCM020], and 2,600  $\mu$ g/kg [SD-PCM032]) exceeded the SQS of 650  $\mu$ g/kg. Benzyl alcohol was detected in three samples, and one sample (SD-PCM032 [360  $\mu$ g/kg]) exceeded the SQS of 57  $\mu$ g/kg.

#### 3.3.1.7 PCBs

Forty samples were analyzed for PCBs (Table 2). Aroclor 1254 and 1260 were the only Aroclors detected (3 of 40 and 5 of 40, respectively) in the samples, and total PCB concentrations were all below the SQS (Table 5).

#### 3.3.1.8 TOC

TOC in the 40 samples that were analyzed ranged from 0.034 to 8.7 percent (Table 2 and Table 5).

#### 3.3.2 Dioxins/Furans

Six samples were analyzed for dioxins/furans (Table 3). Several of the dioxin/furan congeners were detected (Table 5); however, the toxicity equivalences using one-half of the estimated detection limit were low and ranged from 0.07 to 0.37.

#### 3.3.3 Grain Size

Six samples were analyzed for grain size (Table 4). Total fines in the samples ranged from 0.2 to 2.4 percent with an average of about 1.3 percent.

#### 4.0 DATA QUALITY REVIEW

The chain-of-custody forms are provided in Attachment B. Results of the Stage 2B data validation are reported in Attachment C. A summary of the data validation is presented below.

#### 4.1 PCB ANALYSES

The documentation was found to be clear and complete. The calibration data demonstrated acceptable instrument performance. The blank, surrogate, laboratory control samples (LCS), standard reference material (SRM), matrix spike/matrix-spike duplicate (MS/MSD), and field duplicate results demonstrated acceptable accuracy and precision. Two PCB results were qualified as estimated due to dual-column variability. The PCB data were acceptable for use as qualified.

#### 4.2 METALS ANALYSES

The documentation was found to be clear and complete. The calibration data demonstrated acceptable instrument performance. The method blank, LCS, SRM, and MS results demonstrated acceptable laboratory accuracy. Several metals results were qualified as estimated based on lab and field duplicate variability. The metals data were acceptable for use as qualified.

#### 4.3 SEMIVOLATILE ORGANIC ANALYSES

The documentation was found to be clear and complete. Several results were qualified as estimated due to continuing calibration results, blank contamination, and surrogate, LCS, and MS accuracy. Rejected results for benzyl alcohol and 2,4-dimethylphenol were replaced by acceptable or estimated results from re-extraction. Except for data replaced by results from another analysis, semivolatile organic data are acceptable for use as qualified.

#### 4.4 SEMIVOLATILE ORGANIC SELECTIVE ION MONITORING (SIM) ANALYSES

The documentation was found to be clear and complete. The majority of results were accepted without qualification. Some results were qualified as estimated due to calibration results or surrogate or matrix-spike recoveries. Rejected results for benzyl alcohol and 2,4-dimethylphenol were replaced by acceptable or estimated re-extraction results. One result was qualified as presumed present due to poor spectral match. Except for data replaced by results from another analysis, semivolatile SIM organic data are acceptable for use as qualified.

#### 4.5 DIOXIN/FURAN ANALYSES

The documentation was found to be clear and complete. No discrepancies were noted in analyte identification or result quantitation. The calibration data and system performance checks demonstrated acceptable instrument performance. The quality control results indicated acceptable accuracy. Blank contamination resulted in some estimated concentrations and elevated but acceptable reporting limits. The dioxin/furan data were acceptable for use as qualified.

#### 4.6 GENERAL CHEMISTRY ANALYSES

The documentation was found to be clear and complete. The calibration data indicated acceptable performance. The method blank, LCS, SRM, and MS results demonstrated acceptable laboratory accuracy. Some data were qualified as estimated based on laboratory triplicate and field duplicate variability. The general chemistry results were acceptable for use as qualified.

#### 4.7 GRAIN-SIZE ANALYSIS

The grain-size data were acceptable for use as reported.

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#### 5.0 SUMMARY

#### 5.1 GRAIN SIZE

During placement of the final backfill, periodic exceedances of the turbidity criterion were recorded during water quality monitoring, suggesting a loss of the finer fraction of the backfill during placement. The average fines in the Year 0 samples was approximately 1.3 percent. The average fines in the sand backfill pre-placement quality assurance samples was 1.4 percent; however, the quality assurance analyses were conducted using a different sieve for the fines fraction (#200 [75 microns or  $\mu$ ] versus a #230 [63  $\mu$ ] for the Year 0 samples), which overestimates the percent fines in the quality assurance samples as compared to the Year 0 samples. These data indicate that little or no measureable loss of fines occurred during placement of the final sand backfill.

#### 5.2 CHEMISTRY

As described in the Statement of Basis (EPA 2011a) and the Final Decision and Response to Comments for the DSOA and Southwest Bank corrective action, the performance criteria were excavation to the target depth with subsequent backfilling with material that met the Final Media Cleanup Levels (EPA 2011b). Subsequent to EPA issuing the decision documents, EPA approved the backfill criteria that were presented in Table 3.1 of Appendix 3 of the EPA-approved Request for Approval of Quarry Sites (Floyd|Snider 2012).

The backfill material that was placed along the Plant 2 shoreline, within the DSOA, and in Slip 4 met the EPA-approved backfill criteria. Although the backfill criteria were for the material before it was placed, a comparison of the Year 0 samples to the backfill criteria provides additional confirmation that the corrective measure was constructed in accordance with the EPA decision documents. All of the sampling results presented in Section 3.3.1 were less than the backfill criteria, except for one phenol result, three benzoic acid results, and two total PCBs results.

Measured concentrations of benzoic acid, benzyl alcohol, and phenol in the approved compost material were greater than the backfill criteria (the approved backfill criteria for these constituents were equivalent to the SQS); thus, detections of phenol and benzoic acid in the Year 0 samples at levels greater than the SQS/LAET were not unexpected. EPA approved the use of compost material with elevated concentrations of benzyl alcohol, benzoic acid, and phenol in April 2013, with the understanding that these compounds are natural degradation products of woody debris, and are commonly found in plant matter and wood (Floyd|Snider 2013). Because the compost material used to amend the sand and gravel backfill was composed primarily of aged duff (i.e., leaves, branches, bark, and stems from the forest floor) and other clearings from forested areas, it was anticipated that these compounds may occasionally be present at levels higher than the backfill criteria (SQS) during subsequent sampling events.

The two total PCB results were higher than the backfill criterion of 30  $\mu$ g/kg dry weight (i.e., SD-PCM020 and SD-PCM032) are located within the North Shoreline Area embayment. The embayment is a depositional area where construction was completed in the fall of 2013. The presence of PCBs 1½ years after construction completion at concentrations greater than the backfill criteria is believed to be a result of deposition of fine-grained material from upstream sources.

In context of these factors, the results of Year 0 sampling indicate that all requirements of the Statement of Basis (EPA 2011a) and the Final Decision and Response to Comments (EPA 2011b) were met.

#### 6.0 REFERENCES

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- U.S. Environmental Protection Agency (EPA). 2011a. Statement of Basis for Proposed Corrective Action, Duwamish Sediment Other Area and Southwest Bank, Boeing Plant 2, EPA. Identification Number WAD 00925 6819, Administrative Order on Consent 1092-01-022-3008(H). U.S. Environmental Protection Agency Region 10, Seattle, March.

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#### POST-CONSTRUCTION SURFACE SAMPLE LOCATIONS—YEAR 0

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

				e, North Zone, urvey Feet
Location	Sample ID	Date Sampled	Easting	Northing
In-water Work Area S	Samples Above -5 feet N	/ILLW and Below +4 feet	MLLW	
SD-PCM001	SD-PCM00115	3/11/2015	1273101	198117
SD-PCM002	SD-PCM00215	3/10/2015	1273448	197828
SD-PCM003	SD-PCM00315	3/11/2015	1273602	197733
SD-PCM004	SD-PCM00415	3/11/2015	1273835	197481
SD-PCM005	SD-PCM00515	3/10/2015	1274228	197126
SD-PCM006	SD-PCM00615	3/10/2015	1274661	196749
SD-PCM206 <sup>1</sup>	SD-PCM20615	3/10/2015	1274662	196745
SD-PCM007	SD-PCM00715	2/24/2015	1275013	196425
SD-PCM008	SD-PCM00815	2/24/2015	1275401	196073
SD-PCM009	SD-PCM00915	2/25/2015	1275768	195745
In-water Dredging Ar	ea Samples Below -5 fe			
SD-PCM010	SD-PCM01015	3/11/2015	1273238	198753
SD-PCM011	SD-PCM01115	3/10/2015	1272985	198189
SD-PCM012	SD-PCM01215	3/11/2015	1273308	197900
SD-PCM212 <sup>1</sup>	SD-PCM21215	3/11/2015	1273312	197900
SD-PCM013	SD-PCM01315	3/10/2015	1273628	197610
SD-PCM014	SD-PCM01415	3/10/2015	1273948	197325
SD-PCM015	SD-PCM01515	3/11/2015	1274273	197031
SD-PCM016	SD-PCM01615	3/10/2015	1274643	196701
SD-PCM017	SD-PCM01715	2/24/2015	1274915	196454
SD-PCM018	SD-PCM01815	2/24/2015	1275232	196164
SD-PCM218 <sup>1</sup>	SD-PCM21815	2/24/2015	1275230	196162
SD-PCM019	SD-PCM01915	2/24/2015	1275555	195875
Shoreline Area Samp	les at Approximately +	4 feet MLLW		
SD-PCM020	SD-PCM02015	3/11/2015	1272994	198398
SD-PCM021	SD-PCM02115	3/11/2015	1272991	198281
SD-PCM022	SD-PCM02215	3/10/2015	1274829	196689
SD-PCM023	SD-PCM02315	2/24/2015	1275190	196374
SD-PCM223 <sup>1</sup>	SD-PCM22315	2/24/2015	1275187	196373
SD-PCM024	SD-PCM02415	2/24/2015	1275484	195999
Outfall Samples	•	· · · · · · · · · · · · · · · · · · ·		:
SD-PCM025	SD-PCM02515	3/11/2015	1273046	198532
SD-PCM026	SD-PCM02615	3/10/2015	1274532	196926
SD-PCM027	SD-PCM02715	2/25/2015	1274768	196555
SD-PCM028	SD-PCM02815	2/24/2015	1275291	196096
SD-PCM029	SD-PCM02915	2/24/2015	1275490	195923
SD-PCM030	SD-PCM03015	2/25/2015	1275656	195748

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#### POST-CONSTRUCTION SURFACE SAMPLE LOCATIONS—YEAR 0

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
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				e, North Zone, urvey Feet							
Location	Sample ID	Date Sampled	Easting	Northing							
horeline Area Samples at Approximately +7 feet MLLW											
SD-PCM031	SD-PCM03115	3/12/2015	1273065	198281							
SD-PCM032	SD-PCM03215	3/12/2015	1273156	198222							
SD-PCM033	SD-PCM03315	3/12/2015	1273298	197991							
SD-PCM034	SD-PCM03415	3/12/2015	1275180	196440							
SD-PCM035	SD-PCM03515	3/12/2015	1275310	196324							
SD-PCM036	SD-PCM03615	3/12/2015	1275635	195921							

#### Note(s)

1. Field duplicate.

#### Abbreviation(s)

MLLW = mean lower low water NAD = North American Datum

WA State Plane = Washington State Plane Coordinates

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## SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

	O				Intan		<u> </u>	- F & BALL 14/ 1 F	-1 4 # BALL 184			
	Sampling Area	SD-PCM001	SD-PCM002	SD-PCM003			rea Samples Abov	SD-PCM006		SD-PCM007	SD-PCM008	SD-PCM009
	Location Ionitoring Year	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	SD-PCN Year 0 (2		Year 0 (2015)	Year 0 (2015)	SD-PCM206 Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)
	Collection Date	3/11/2015	3/10/2015	3/11/2015	3/11/20		3/10/2015	3/10/2015	3/10/2015	2/24/2015	2/24/2015	2/25/2015
	mple Depth (ft)	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.3		0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33
Sa	Sample ID		SD-PCM00215	SD-PCM00315	SD-PCM		SD-PCM00515	SD-PCM00615	SD-PCM20615	SD-PCM00715	SD-PCM00815	SP-PCM00915
	SMS SQS	3D-PCW00113	3D-PCIVIOU213	3D-PCIVIOU313	3D-PCIVI	JU4 13	3D-PCWI00313	3D-PCIVIOU013	3D-PCIVI20013	SD-PCIVIOU7 15	SD-PCIVIOUS 15	SF-PCIVIOUS 13
Analyte	Criteria <sup>3</sup>	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value 0	02	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2
Conventionals	Criteria	value Q1 Q2	value Qi Q	value Q1 Q2	value (	RI QZ	value Q1 Q2	value Q1 Q2	Value Q1 Q2	value Q1 Q2	Value Q1 Q2	Value Q1 Q2
Total Organic Carbon												
(percent)	_	0.061	0.068	0.076	0.087		0.083	0.08	0.048	0.079	0.04	0.051
\( \)												
Metals (mg/kg)	<i>F</i> 7		2.3	2.2	2.4				1.0	4.0	4.0	1.0
Arsenic Cadmium	57 5.1	0.3	0.3	0.2	0.2		0.2	0.2	1.9 0.2 U	1.8 0.2	1.2 0.2 U	1.6 0.2 U
Chromium	260	18.9	16.2	18.3	18.1		19.4	16.2 J	20.7	20.9	17.9	15.9
Copper	390	16.2	15.6	13.7	16.1		13.8	13.9	13	13.3	12.4	11.5
Lead	450	2	2 U	2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U
Mercury	0.41	0.02 U	0.02 U	0.02 U	0.03		0.02 U	0.02 U	0.02 U	0.03 U	0.03 U	0.02 U
Silver	6.1	0.3 U	0.3 U	0.3 U	0.3 U		0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Zinc	410	31	31	28	30		29	27	26	30	28	25
Non-ionizable Organic Compound		0.	0.	_~						00	_0	
Aromatic Hydrocarbons (µg/k												
Total LPAHs	5,200	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Naphthalene	2,100	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Acenaphthylene	1,300	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Acenaphthene	500	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Fluorene	540	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Phenanthrene	1,500	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Anthracene	960	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
2-Methylnaphthalene	670	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Total HPAHs	12,000	40 U	40 U	40 U	40 U		60 J	38 U	39 U	2.5 J	39 U	37 U
Fluoranthene	1,700	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Pyrene	2,600	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Benz[a]anthracene	1,300	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Chrysene	1,400	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Total benzofluoranthenes	3,200	40 U	40 U	40 U	40 U		10 J	38 U	39 U	37 U	39 U	37 U
Benzo[a]pyrene	1,600	20 U	20 U	20 U	20 U		19 U	19 U	19 U	19 U	20 U	18 U
Indeno[1,2,3-c,d]pyrene	600	20 U	20 U	20 U	20 U		6.5 J	19 U	19 U	19 U	20 U	18 U
Dibenzo[a,h]anthracene	230 670	5 U 20 U	4.9 U 20 U	5 U 20 U	5 U 20 U		4.3 J 39	4.8 U 19 U	4.8 U 19 U	2.5 J 19 U	4.9 U 20 U	4.6 U 18 U
Benzo[g,h,i]perylene		20 U	20 U	ZU U	20 0		১৬	19/0	19 0	เลโก	20 U	10 U
Chlorinated Benzenes (µg/kg)		Elu I	4.0		-1			1 4011	1 4011	4.011	4011	1.011
1,2-Dichlorobenzene	35 110	5 U 5 U	4.9 U 4.9 U	5 U 5 U	5 U 5 U		2.8 J 2.5 J	4.8 U 4.8 U	4.8 U 4.8 U	4.6 U 4.6 U	4.9 U 4.9 U	4.6 U 4.6 U
1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	31	5 U	4.9 U	5 U	5 U		2.5 J 2.6 J	4.8 U	4.8 U	4.6 U	4.9 U	4.6 U
Hexachlorobenzene	22	5 U	4.9 U	5 U	5 U		2.6 J 3.5 J	4.8 U	4.8 U	4.6 U	4.9 U	4.6 U
Hexaciliolopenzene	22	อุบ	4.9 0	อุบ	ี 5 U		3.5 J	4.0 U	4.0 U	4.0 U	4.9 0	4.0 U

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## SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

	Sampling Area					In-water Work A	rea Samples Abov	re -5 ft MLLW and B	elow +4 ft MLLW			
	Location	SD-PCM001	SD-PCM002	SD-PCM	003	SD-PCM004	SD-PCM005	SD-PCM006	SD-PCM206	SD-PCM007	SD-PCM008	SD-PCM009
	Monitoring Year	Year 0 (2015)	Year 0 (2015)	Year 0 (20		Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)
	Collection Date	3/11/2015	3/10/2015	3/11/201		3/11/2015	3/10/2015	3/10/2015	3/10/2015	2/24/2015	2/24/2015	2/25/2015
s	ample Depth (ft)	0 - 0.33	0 - 0.33	0 - 0.33	}	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33
	Sample ID	SD-PCM00115	SD-PCM00215	SD-PCM00		SD-PCM00415	SD-PCM00515	SD-PCM00615	SD-PCM20615	SD-PCM00715	SD-PCM00815	SP-PCM00915
	SMS SQS											
Analyte	Criteria 3	Value Q1 Q2	Value Q1 Q2	Value Q	Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2
Phthalate Esters (µg/kg)				•								
Dimethyl phthalate	71	5 U	4.9 U	5 U		5 U	4.7 U	4.8 U	4.8 U	4.6 U	4.9 U	4.6 U
Diethyl phthalate	200	20 U	20 U	20 U		23 J	19 U	19 U	19 U	19 U	20 U	20 B U
Di-n-butyl phthalate	1,400	20 U	20 U	20 U		20 U	19 U	19 U	19 U	19 U	20 U	18 U
Butyl benzyl phthalate	63	5 U	4.9 U	5 U		5 U	2.9 J J	4.8 U	4.8 U	5.3 Q J	4.9 U	4.6 U
Bis[2-ethylhexyl] phthalate	1,300	50 U	49 U	50 U		50 U	47 U	48 U	48 U	46 U	49 U	46 U
Di-n-octyl phthalate	6,200	20 U	20 U	20 U		20 U	19 U	19 U	19 U	19 U	20 U	18 U
Miscellaneous (µg/kg)												
Dibenzofuran	540	20 U	20 U	20 U		20 U	19 U	19 U	19 U	19 U	20 U	18 U
Hexachlorobutadiene	11	5 U	4.9 U	5 U		5 U	2.4 J	4.8 U	4.8 U	4.6 U	4.9 U	4.6 U
N-nitrosodiphenylamine	28	5 U	4.9 U	5 U		5 U	4.7 U	4.8 U	4.8 U	4.6 U	4.9 U	4.6 U
Ionizable Organic Compounds (	0 0/											
Phenol	420	20 U UJ	20 U UJ	20 U	UJ	20 U UJ	10 J	19 U UJ	19 U	19 U	20 U UJ	18 U
2-Methylphenol	63	5 U UJ	4.9 U UJ	5 U	UJ	5 U UJ	4.7 U	4.8 U UJ	4.8 U	4.6 U	4.9 U UJ	4.6 U
4-Methylphenol	670	20 U UJ	20 U UJ	20 U	UJ	20 U UJ	19 U	19 U UJ	19 U	19 U	20 U UJ	18 U
2,4-Dimethylphenol	29	25 U UJ	25 U UJ	25 U	UJ	25 U UJ	23 U	24 U	24 U	23 U	24 U UJ	23 U
Pentachlorophenol	360	20 U UJ	20 U UJ	20 U	UJ	20 U UJ	19 U UJ	19 U UJ	19 U	19 U	20 U UJ	18 U
Benzyl alcohol	57	20 U UJ	20 U UJ	20 U	UJ	20 U UJ	19 U	19 U UJ	19 U	19 U	20 U UJ	18 U
Benzoic acid	650	200 U UJ	200 U UJ	200 U	UJ	200 U UJ	190 U	190 U UJ	190 U	190 U	200 U UJ	180 U
PCBs (µg/kg)	T ve '	2.2		0.01	1	1 00111			0.011			0.011
Aroclor 1016	NE	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.9 U	3.9 U
Aroclor 1221	NE NE	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.9 U	3.9 U
Aroclor 1232	NE NE	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.9 U	3.9 U
Aroclor 1242 Aroclor 1248	NE NE	3.9 U 3.9 U	3.9 U 3.9 U	3.9 U		3.9 U 3.9 U	3.8 U 3.8 U	3.8 U 3.8 U	3.8 U 3.8 U	4 U 4 U	3.9 U 3.9 U	3.9 U 3.9 U
Aroclor 1248 Aroclor 1254	NE NE	3.9 U	3.9 U	3.9 U 3.9 U		3.9 U	3.8 U	3.8 U	3.8 U		3.9 U	3.9 U
Aroclor 1254 Aroclor 1260	NE NE	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U	3.8 U	3.8 U	4 U 4 U	3.9 U	3.9 U
Total PCB												
(μg/kg Dry-Weigh	•	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U	3.8 U	3.8 U	4 U	3.9 U	3.9 U
Total PCB	1 12		_				_	_	_	_	_	_
(mg/kg OC)	1											

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### SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

	Sampling Area								In-wate	er Dredging Area S	Samples Below -5 ft	MLLW					
	Location	SD-PCI	M010	SD-F	PCM011	SD-PCM0	)12	SD-PCM212	SD-PCM013	SD-PCM014	SD-PCM015	SD-PCM016	SD-PCM017	SD-PCM0	18	SD-PCM218	SD-PCM019
	Monitoring Year	Year 0 (	2015)	Year	0 (2015)	Year 0 (20	)15)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (20°	15)	Year 0 (2015)	Year 0 (2015)
	Collection Date	3/11/2	015	3/1	0/2015	3/11/201	15	3/11/2015	3/10/2015	3/10/2015	3/11/2015	3/10/2015	2/24/2015	2/24/201	5	2/24/2015	2/24/2015
	Sample Depth (ft)	0 - 0.	33	0 -	- 0.33	0 - 0.33	3	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33		0 - 0.33	0 - 0.33
	Sample ID	SD-PCM	01015	SD-P0	CM01115	SD-PCM01	1215	SD-PCM21215	SD-PCM01315	SD-PCM01415	SD-PCM01515	SD-PCM01615	SD-PCM01715	SD-PCM018	815	SD-PCM21815	SD-PCM01915
	SMS SQS																
Analyte	Criteria 3	Value	Q1 Q2	Value	Q1 Q2	Value Q1	1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1	Q2	Value Q1 Q2	Value Q1 Q2
Conventionals																	
Total Organic Carbo	on	0.097		0.16	5	0.095		0.065	0.065	0.065	0.071	0.076 J	0.079 J	0.059	_	0.187	0.034
(percer	nt) —	0.097		0.16	5	0.095		0.065	0.065	0.065	0.071	0.076	0.079	0.059	J	0.167	0.034
Metals (mg/kg)																	
Arsenic	57	1.9			3	2.3	J	1.6	2.2	2.2	1.9	2.1	2	5.7	J	3.1	1.5
Cadmium	5.1	0.2		0.2		0.2 U		0.2 U	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U		0.2 U	0.2 U
Chromium	260	16.6		17.5		14.2		16.2	28.2	18.8	17 J	13.2 J	17.1 J	23.9	J	18.2	34.5
Copper	390	17.9		13.4		13.1		12.7	14.3	15.5	12.6	13.2	12.2	12.6		13.5	14
Lead	450	2 L			2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U	2 U		2	2 U
Mercury	0.41	0.02 L		0.0		0.02 U		0.02 U	0.02 U	0.05	0.02 U	0.02 U	0.02 U	0.03 U		0.03 U	0.02 U
Silver	6.1	0.3 L	J		3 U	0.3 U		0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U		0.3 U	0.3 U
Zinc	410	29		20	Ö	27		25	30	34	30	25	26 J	29	1	32	28
Non-ionizable Organic Compou																	
Aromatic Hydrocarbons (μ																	
Total LPAHs	5,200	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		11 J	20 U
Naphthalene	2,100	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Acenaphthylene	1,300	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Acenaphthene	500	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U	-	20 U	20 U
Fluorene Phenanthrene	540 1,500	19 L			9 U 9 U	19 U 19 U		20 U 20 U	19 U 19 U	19 U 19 U	19 U 19 U	19 U 19 U	19 U 19 U	20 U 20 U		20 U 11 J	20 U 20 U
Anthracene	960	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U	+	20 U	20 U
2-Methylnaphthalene	670	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Total HPAHs	12,000	38 L			8 U	38 U		40 U	38 U	37 U	38 U	43 J	2.9 J	39 U		80 J	40 U
Fluoranthene	1,700	19 L			9 U	19 U		20 U	19 U	19 U	19 U	4.8 J	19 U	20 U	+	17 J	20 U
Pyrene	2,600	19 L			9 U	19 U		20 U	19 U	19 U	19 U	6.8 J	19 U	20 U		16 J	20 U
Benz[a]anthracene	1,300	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		7.8 J	20 U
Chrysene	1,400	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		12 J	20 U
Total benzofluoranthenes	3,200	38 L			8 U	38 U		40 U	38 U	37 U	38 U	39 U	38 U	39 U		20 J	40 U
Benzo[a]pyrene	1,600	19 L			9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		6.9 J	20 U
Indeno[1,2,3-c,d]pyrene	600	19 L	J	19	9 U	19 U		20 U	19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Dibenzo[a,h]anthracene	230	4.8 L		4.8	B U	4.8 U		5 U	4.8 U	4.7 U	4.8 U	4.6 J	2.9 J	4.9 U		4.9 U	5 U
Benzo[g,h,i]perylene	670	19 L	J	19	9 U	19 U		20 U	19 U	19 U	19 U	27	19 U	20 U		20 U	20 U
Chlorinated Benzenes (µg/l	(g)																
1,2-Dichlorobenzene	35	4.8 L			8 U	4.8 U		5 U	4.8 U	4.7 U	4.8 U	2.8 J	4.8 U	4.9 U		4.9 U	5 U
1,4-Dichlorobenzene	110	4.8 L		4.8	8 U	4.8 U		5 U	4.8 U	4.7 U	4.8 U	2.8 J	4.8 U	4.9 U		4.9 U	5 U
1,2,4-Trichlorobenzene	31	4.8 L			B U	4.8 U		5 U	4.8 U	4.7 U	4.8 U	2.7 J	4.8 U	4.9 U		4.9 U	5 U
Hexachlorobenzene	22	4.8 L	J	4.8	8 U	4.8 U		5 U	4.8 U	4.7 U	4.8 U	3.2 J	4.8 U	4.9 U		4.9 U	5 U

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## SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

	Sampling Area							In-wate	er Dredging Area S	samples Below -5	ft MLLW					
	Location	SD-PCM0	10	SD-PCM011	SD-PCM012	SD-PCM2	12	SD-PCM013	SD-PCM014	SD-PCM015	SD-PCM016	SD-PCM017	SD-PCM0 <sup>2</sup>	18	SD-PCM218	SD-PCM019
	Monitoring Year	Year 0 (20	15)	Year 0 (2015)	Year 0 (2015)	Year 0 (20	15)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (201	15)	Year 0 (2015)	Year 0 (2015)
	Collection Date	3/11/201	5	3/10/2015	3/11/2015	3/11/201	5	3/10/2015	3/10/2015	3/11/2015	3/10/2015	2/24/2015	2/24/2015	5	2/24/2015	2/24/2015
	Sample Depth (ft)	0 - 0.33	5	0 - 0.33	0 - 0.33	0 - 0.33		0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33		0 - 0.33	0 - 0.33
	Sample ID	SD-PCM01	015	SD-PCM01115	SD-PCM01215	SD-PCM21	215	SD-PCM01315	SD-PCM01415	SD-PCM01515	SD-PCM01615	SD-PCM01715	SD-PCM018	315	SD-PCM21815	SD-PCM01915
	SMS SQS															
Analyte	Criteria <sup>3</sup>	Value Q1	Q2	Value Q1 Q2	Value Q1 Q2	Value Q1	Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1	Q2	Value Q1 Q2	Value Q1 Q2
Phthalate Esters (µg/kg)																
Dimethyl phthalate	71	4.8 U		4.8 U	4.8 U	5 U		4.8 U	4.7 U	4.8 U	2.7 J	4.8 U	4.9 U		4.9 U	5 U
Diethyl phthalate	200	19 U		19 U	19 U	20 U		19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Di-n-butyl phthalate	1,400	19 U		19 U	19 U	20 U		19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Butyl benzyl phthalate	63	4.8 U		4.8 U	4.8 U	5 U		4.8 U	4.7 U	4.8 U	3.6 J J	2.8 QJ J	4.9 U		4.9 U	3.8 QJ J
Bis[2-ethylhexyl] phthalate	1,300	48 U		48 U	48 U	50 U		48 U	47 U	48 U	48 U	48 U	49 U		33 J	50 U
Di-n-octyl phthalate	6,200	19 U		19 U	19 U	20 U		19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Miscellaneous (μg/kg)																
Dibenzofuran	540	19 U		19 U	19 U	20 U		19 U	19 U	19 U	19 U	19 U	20 U		20 U	20 U
Hexachlorobutadiene	11	4.8 U		4.8 U	4.8 U	5 U		4.8 U	4.7 U	4.8 U	2.5 J	4.8 U	4.9 U		4.9 U	5 U
N-nitrosodiphenylamine	28	4.8 U		4.8 U	4.8 U	5 U		4.8 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U		4.9 U	5 U
Ionizable Organic Compounds	s (µg/kg)															
Phenol	420	19 U	UJ	19 U UJ	19 U UJ	20 U		10 J	19 U	10 J	9.7 J	19 U		UJ	20 U	20 U
2-Methylphenol	63	4.8 U	UJ	4.8 U UJ	4.8 U UJ	5 U	UJ	4.8 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U	UJ	4.9 U	5 U
4-Methylphenol	670	19 U	UJ	19 U UJ	19 U UJ	20 U	UJ	19 U	19 U	19 U	19 U	19 U	20 U	UJ	20 U	20 U
2,4-Dimethylphenol	29	24 U	UJ	24 U UJ	24 U UJ	25 U	UJ	24 U	23 U	24 U	24 U	24 U	25 U	UJ	24 U	25 U
Pentachlorophenol	360	19 U	UJ	19 U UJ	19 U UJ	20 U	UJ	19 U	19 U	19 U	19 U	19 U	20 U	UJ	20 U	20 U
Benzyl alcohol	57	19 U	UJ	19 U UJ	19 U UJ	20 U	UJ	19 U	19 U	19 U	19 U	19 U	20 U	UJ	20 U	20 U UJ
Benzoic acid	650	190 U	UJ	190 U UJ	190 U UJ	200 U	UJ	190 U	190 U	190 U	190 U	62 JQ J	200 U	UJ	130 JQ J	200 U
PCBs (µg/kg)																
Aroclor 1016	NE	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U
Aroclor 1221	NE	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U
Aroclor 1232	NE	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U
Aroclor 1242	NE	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U
Aroclor 1248	NE	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		3.9 U	3.8 U
Aroclor 1254	NE	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		5.2	3.8 U
Aroclor 1260	NE	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		3.6 J	3.8 U
Total PC (µg/kg Dry-Weig	120	3.8 U		3.8 U	3.8 U	3.9 U		3.8 U	3.7 U	3.8 U	3.9 U	3.9 U	3.9 U		8.8 J J <sup>5</sup>	3.8 U
Total PC (mg/kg O	i i 12 i	_		_						_		_	_		_	_

## SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

						Shore	eline Area	Samp	oles at	Approximat	ely +4 ft	MLLW				
	Location	SD-P	CM020	SD-P	CM02		SD-P			SD-PCI			CM223	SD-F	CM02	4
	Monitoring Year	Year (	(2015)	Year (	(201	5)	Year 0	(201	5)	Year 0 (	2015)	Year (	0 (2015)		0 (201	
	Collection Date	3/11	/2015	3/11	/2015		3/10	/2015	,	2/24/2	015	2/24	/2015	2/2	4/2015	;
	Sample Depth (ft)	0 -	0.33	0 -	0.33		0 -	0.33		0 - 0.	33	0 -	0.33	0 -	0.33	
	Sample ID	SD-PC	M02015	SD-PC	M021	15	SD-PC	M022	15	SD-PCM	02315	SD-PC	M22315	SD-P0	CM024	15
	SMS SQS															
Analyte	Criteria 3	Value	Q1 Q2	Value	Q1	Q2	Value	Q1	Q2	Value	Q1 Q2	Value	Q1 Q2	Value	Q1	Q2
Conventionals					ı								'	·		
Total Organic Carbon		2.07		0.110			0.052			0.034		0.054		0.037	7	
(percent)	_	2.07		0.118			0.052			0.034		0.054		0.037		
Metals (mg/kg)																
Arsenic	57	4.8		2.5			1.7			1.7		1.6		1.9	9	+
Cadmium	5.1	0.5		0.2			0.2			0.2 U		0.2		0.2		1
Chromium	260	29.1		17.7			22.5			22.9		20.1		18		1
Copper	390	36.8		15.9			14.1			12.9		13.9		17.5		
Lead	450	8			U		2	U		2 U			U		2 U	1
Mercury	0.41	0.04		0.02			0.02			0.02 U		0.02		0.02		
Silver	6.1	0.5	U	0.4			0.3	U		0.3 U		0.3	U		3 U	
Zinc	410	64		32			26.8			28		30		33	3	
Non-ionizable Organic Compounds											·	-				
Aromatic Hydrocarbons (µg/kg)																
Total LPAHs	5,200	57		20			19			20 U		27			U	
Naphthalene	2,100	20			U		19			20 U		27			U	
Acenaphthylene	1,300	20			U		19			20 U		27			U	
Acenaphthene	500	20			U		19			20 U		27			U	
Fluorene	540	20		20			19			20 U		27			U	
Phenanthrene	1,500	43		20			19			20 U		27			U	
Anthracene	960	14		20			19			20 U		27			U	
2-Methylnaphthalene	670	20		20			19			20 U		27			U	
Total HPAHs	12,000	240		40			2.8			40 U		53			3 U	
Fluoranthene	1,700	49		20			19			20 U		27			U	
Pyrene	2,600	44		20			19			20 U		27			U	
Benz[a]anthracene	1,300	19			U		19			20 U		27			U	
Chrysene	1,400	35			U		19			20 U		27			U	
Total benzofluoranthenes	3,200	51		40			38			40 U		53			3 U	
Benzo[a]pyrene	1,600	11		20			19			20 U		27			U	
Indeno[1,2,3-c,d]pyrene	600	14		20			19			20 U		27			U	
Dibenzo[a,h]anthracene	230	5.2			U		2.8			5 U		6.6		4.8	3 U	
Benzo[g,h,i]perylene	670	12	J	20	U		19	U		20 U		27	U	19	U	
Chlorinated Benzenes (µg/kg)																
1,2-Dichlorobenzene	35	4.9			U		4.7			5 U		6.6			3 U	
1,4-Dichlorobenzene	110	4.9			U		4.7			5 U		6.6			3 U	
1,2,4-Trichlorobenzene	31	4.9			U		4.7			5 U		6.6			3 U	
Hexachlorobenzene	22	4.9	U	5	U		4.7	U	1	5 U		6.6	U	4.8	3 U	

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## SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

						Shore	eline Area Samples	at Approxin	nately	+4 ft N	/ILLW				$\overline{}$
	Location	SD-P	CM02	0	SD-PCM02		SD-PCM022		CM02			CM223	SD-P	CM02	4
	Monitoring Year	Year (		_	Year 0 (201		Year 0 (2015)		0 (201			(2015)	Year 0		
	Collection Date		/2015		3/11/2015		3/10/2015		4/2015			/2015		/2015	
	Sample Depth (ft)		0.33		0 - 0.33		0 - 0.33		- 0.33			0.33		0.33	
	Sample ID	SD-PC		15	SD-PCM021	15	SD-PCM02215		CM023	15		M22315	SD-PC		15
	SMS SQS														
Analyte	Criteria 3	Value	Q1	Q2	Value Q1	Q2	Value Q1 Q	2 Value	Q1	Q2	Value	Q1 Q2	Value	Q1	Q2
Phthalate Esters (µg/kg)															
Dimethyl phthalate	71	4.9			5 U		4.7 U	5	5 U		6.6		4.8		
Diethyl phthalate	200	20			20 U		19 U		) U		27		19		
Di-n-butyl phthalate	1,400	20			20 U		19 U		) U		27		19		
Butyl benzyl phthalate	63	59			5 U		4.7 U	2.5	5 QJ	J	10	Q J	4.8	U	
Bis[2-ethylhexyl] phthalate	1,300	110			50 U		47 U		) U		66		48		
Di-n-octyl phthalate	6,200	20	U		20 U		19 U	20	) U		27	U	19	U	
Miscellaneous (μg/kg)					<u>.</u>										
Dibenzofuran	540	20	U		20 U		19 U		) U		27	U	19		
Hexachlorobutadiene	11	4.9	U		5 U		4.7 U		5 U		6.6	U	4.8		
N-nitrosodiphenylamine	28	4.9	U		5 U		4.7 U	5	5 U		6.6	U	4.8	U	
Ionizable Organic Compounds (μg/kg	3)				<u>.</u>										
Phenol	420	260			8.9 J		9.4 J		U		27	B U	19		
2-Methylphenol	63	4.9			5 U		4.7 U		5 U		6.6		4.8		
4-Methylphenol	670	86			20 U		19 U		) U		27		19		
2,4-Dimethylphenol	29	25			25 U		24 U		5 U		33		24		
Pentachlorophenol	360	13		J	20 U	UJ	19 U		) U		27		19		
Benzyl alcohol	57	20	U		20 U		19 U		) U		27	C	19	U	
Benzoic acid	650	1300		J	200 U		190 U	200	) U		270	U	190	U	
PCBs (µg/kg)															
Aroclor 1016	NE	3.8	U		4 U		4 U		) U		3.9	U	3.9		
Aroclor 1221	NE	3.8	U		4 U		4 U		U		3.9	U	3.9		
Aroclor 1232	NE	3.8	U		4 U		4 U	3.9	U		3.9	U	3.9	U	
Aroclor 1242	NE	58	Υ	UY	4 U		4 U	3.9	U		3.9	U	3.9	U	
Aroclor 1248	NE	3.8	U		4 U		4 U	3.9	U		3.9	U	3.9	U	
Aroclor 1254	NE	30		J	4 U		4 U		U		3.9		3.9		
Aroclor 1260	NE	27			4 U		4 U	3.9	U		3.9	U	3.9	U	
Total PCB (µg/kg Dry-Weight	120	57		J <sup>5</sup>	4 U		4 U	3.9	U		3.9	U	3.9	U	
Total PCB (mg/kg OC)	1 12 1	2.8		J <sup>6</sup>	_		_	_	_		_		_		

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## SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

	Sampling Area	n SD-PCM025 SD-PCM026 SD-PCM027 SD-PCM028 SD-										Shoreline Area Samples at Approximately +7 ft MLLW					
	Location		CM025	SD-PCM0	26   9			MUSS	SD-PCM029	Sr	-PCM030	SD-PCM031	SD-PCM032	SD-PCM033	SD-PCM034	SD-PCM035	SD-PCM036
	Monitoring Year			Year 0 (20°		ar 0 (2015)	Year 0 (		Year 0 (2015)		r 0 (2015)	Year 0 (2015		Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)
	Collection Date		/2015	3/10/201		2/25/2015	2/24/2		2/24/2015		25/2015	3/12/2015	3/12/2015	3/12/2015	3/12/2015	3/12/2015	3/12/2015
s	sample Depth (ft)		0.33	0 - 0.33		0 - 0.33	0 - 0.		0 - 0.33		0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33
	Sample ID		M02515	SD-PCM02	615 SE	-PCM02715	SD-PCM		SD-PCM0291		PCM03015	SD-PCM0311			SD-PCM03415	SD-PCM03515	SD-PCM03615
	SMS SQS																
Analyte	Criteria <sup>3</sup>	Value	Q1 Q2	Value Q1	Q2 Va	ue Q1 Q2	Value	Q1 Q2	Value Q1 C	Q2 Valu	e Q1 Q	2 Value Q1	Q2 Value Q1 Q	2 Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2
Conventionals							<u> </u>	·		•							
Total Organic Carbon	_	0.054		0.058		072	0.036		0.049	0.4	68	2.65	0.7	0.47	4.40	1.46	0.97
(percent)	_	0.054	1	0.058		072	0.036		0.049	0.	68	2.65	8.7	0.47	1.19	1.46	0.97
Metals (mg/kg)																	
Arsenic	57	1.8	3	1.7		1.4 J	2.1		2.4		1.6	2.8	15	1.3	3.2	3.3	2.4
Cadmium	5.1	0.2	U	0.2		0.2 U	0.2 L	J	0.2		0.2	0.3	1 U	0.3	0.2 U	0.2 U	0.3
Chromium	260	14.5		19.7		15.9	18.4		28		30	18.9	27	26.8	20.9	19.1	23.2
Copper	390	11.7		17.6		11.1	12.3		13.8	1	5.5	24.6	50	22.9	19.3	20	22.6
Lead	450		U	2 U		2 U	2 L		2		2 U	4	20	2 U	4	3	5
Mercury	0.41	0.03		0.04		).02 U	0.02 L		0.02 U		02 U	0.03 U	0.1	0.02 U	0.03 U	0.02 U	0.02
Silver	6.1	0.3		0.3 U		0.3 U	0.3 L	J	0.3 U		).3 U	0.4 U	2 U	0.3 U	0.3 U	0.3 U	0.4 U
Zinc	410	25	i l	28		25	26		33		26	35	138	30	31	30	34
Non-ionizable Organic Compound	S																
Aromatic Hydrocarbons (µg/kg	<i>31</i>																
Total LPAHs	5,200	19		20 U		19 U	19 L		19 U		20 U	121 J	296	18 U	34	54.1 J	13 J
Naphthalene	2,100	19		20 U		19 U	19 L		19 U		20 U	12 J	56	18 U	20 U	19 U	19 U
Acenaphthylene	1,300	19		20 U		19 U	19 L		19 U		20 U	19 U	20 U	18 U	20 U	19 U	19 U
Acenaphthene	500	19		20 U		19 U	19 L		19 U		20 U	17 J	20 U	18 U	20 U	5.6 J	19 U
Fluorene	540	19		20 U		19 U	19 L		19 U		20 U	18 J	20 U	18 U	20 U	7.5 J	19 U
Phenanthrene	1,500	19		20 U		19 U	19 L		19 U		20 U	68	130	18 U	34	41	13 J
Anthracene	960 670	19		20 U 20 U		19 U 19 U	19 L		19 U 19 U		20 U 20 U	5.8 J 6.7 J	110 20 U	18 U 18 U	20 U 20 U	19 U 19 U	19 U
2-Methylnaphthalene		19		4.3 J		19 U	37 L		38 U		20 U 6.9 J		629	37 U	32 J		19 U 25 J
Total HPAHs Fluoranthene	12,000 1,700	38	U	4.3 J 20 U		12 J	19 L		19 U		5.9 J	86 J 33	140	18 U	32 J 16 J	41.5 J 20	25 J 14 J
Pyrene	2,600	19		20 U		19 U	19 L		19 U	-	20 U	27	130	18 U	16 J	14 J	14 J
Benz[a]anthracene	1,300	19		20 U		19 U	19 L		19 U		20 U	19 U	40	18 U	20 U	19 U	11 J
Chrysene	1,400	19		20 U		19 U	19 L		19 U		20 U	12 J	110	18 U	20 U	7.5 J	19 U
Total benzofluoranthenes	3,200	38		39 U		39 U	37 L		38 U		40 U	14 J	130	37 U	40 U	37 U	37 U
Benzo[a]pyrene	1,600	19		20 U		19 U	19 L		19 U		20 U	19 U	37	18 U	20 U	19 U	19 U
Indeno[1,2,3-c,d]pyrene	600	19		20 U		19 U	19 L		19 U		20 U	19 U	29	18 U	20 U	19 U	19 U
Dibenzo[a,h]anthracene	230	4.7		4.3 J		4.8 U	4.6 L		4.7 U		1.9 U	4.8 U	13	4.6 U	5 U	4.7 U	4.6 U
Benzo[g,h,i]perylene	670	19		23		12 J	19 L		19 U		20 U	19 U	20 U	18 U	20 U	19 U	19 U
Chlorinated Benzenes (µg/kg)				•	•		<u>'</u>	*					,	•			
1,2-Dichlorobenzene	35	4.7	U	3.3 J		4.8 U	4.6 L	J	4.7 U		1.9 U	4.8 U	3.5 J	4.6 U	5 U	4.7 U	4.6 U
1,4-Dichlorobenzene	110	4.7		3.4 J		4.8 U	4.6 L		4.7 U		4.9 U	4.8 U	5 U	4.6 U	5 U	4.7 U	4.6 U
1,2,4-Trichlorobenzene	31	4.7	U	3.5 J		4.8 U	4.6 L		4.7 U		1.9 U	4.8 U	5 U	4.6 U	5 U	4.7 U	4.6 U
Hexachlorobenzene	22	4.7	U	3.8 J		4.8 U	4.6 L	J	4.7 U		1.9 U	4.8 U	5 U	4.6 U	5 U	4.7 U	4.6 U

#### SEDIMENT MANAGEMENT STANDARDS CHEMICALS OF CONCERN ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

	Sampling Area			Outfall S	Samples				Shorelir	ne Area Samples at	Approximately +7	ft MLLW	
	Location	SD-PCM025	SD-PCM026	SD-PCM027	SD-PCM028	SD-PCM029	SD-PCM030	SD-PCM031	SD-PCM032	SD-PCM033	SD-PCM034	SD-PCM035	SD-PCM036
	Monitoring Year	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)	Year 0 (2015)							
	Collection Date	3/11/2015	3/10/2015	2/25/2015	2/24/2015	2/24/2015	2/25/2015	3/12/2015	3/12/2015	3/12/2015	3/12/2015	3/12/2015	3/12/2015
	Sample Depth (ft)	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33
	Sample ID	SD-PCM02515	SD-PCM02615	SD-PCM02715	SD-PCM02815	SD-PCM02915	SD-PCM03015	SD-PCM03115	SD-PCM03215	SD-PCM03315	SD-PCM03415	SD-PCM03515	SD-PCM03615
	SMS SQS												
Analyte	Criteria <sup>3</sup>	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2	Value Q1 Q2							
Phthalate Esters (µg/kg)													
Dimethyl phthalate	71	4.7 U	3.1 J	4.8 U	4.6 U	4.7 U	4.9 U	4.8 U	5 U	4.6 U	5 U	4.7 U	4.6 U
Diethyl phthalate	200	19 U	20 U	76 B U	19	19 U	29 B U	19 U	20 U	18 U	20 U	19 U	19 U
Di-n-butyl phthalate	1,400	19 U	20 U	19 U	19 U	19 U	20 U	19 U	20 U	18 U	20 U	19 U	19 U
Butyl benzyl phthalate	63	4.7 U	3.7 J J	4.8 U	4.6 U	4.7 U	4.9 U	4.8 U	39 Q J	4.6 U	5 U	4.7 U	4.6 U
Bis[2-ethylhexyl] phthalate	1,300	47 U	49 U	48 U	46 U	47 U	29 J	48 U	410	46 U	50 U	47 U	46 U
Di-n-octyl phthalate	6,200	19 U	20 U	19 U	19 U	19 U	20 U	19 U	40	18 U	20 U	19 U	19 U
Miscellaneous (µg/kg)													
Dibenzofuran	540	19 U	20 U	19 U	19 U	19 U	20 U	19 U	20 U	18 U	20 U	5.6 J	19 U
Hexachlorobutadiene	11	4.7 U	3 J	4.8 U	4.6 U	4.7 U	4.9 U	4.8 U	5 U	4.6 U	5 U	4.7 U	4.6 U
N-nitrosodiphenylamine	28	4.7 U	4.9 U	4.8 U	4.6 U	4.7 U	4.9 U	4.8 U	5 U	4.6 U	5 U	4.7 U	4.6 U
Ionizable Organic Compounds (	µg/kg)												
Phenol	420	19 U UJ	9.8 J	19 U	19 U	19 U UJ	20 U	63	570	18 U	20 U	19 U	19 U
2-Methylphenol	63	4.7 U UJ	4.9 U	4.8 U	4.6 U	4.7 U UJ	4.9 U	12 M N	5 U	4.6 U	5 U	4.7 U	4.6 U
4-Methylphenol	670	19 U UJ	20 U	19 U	19 U	19 U UJ	20 U	98	130	18 U	20 U	19	19 U
2,4-Dimethylphenol	29	23 U UJ	25 U	24 U	23 U	24 U UJ	25 U	24 U	25 U	23 U	25 U	23 U	23 U
Pentachlorophenol	360	19 U UJ	20 U	19 U	19 U	19 U UJ	20 U	19 U UJ	18 J J	18 U UJ	20 U	19 U UJ	19 U UJ
Benzyl alcohol	57	19 U UJ	20 U	19 U	19 U	19 U	15 J	56	360	19 U	20 U	28	19 U
Benzoic acid	650	190 U UJ	200 U	190 U	190 U	190 U UJ	200 U	680 Q J	2600 Q J	180 U	200 U	84 JQ J	190 U
PCBs (µg/kg)													
Aroclor 1016	NE	3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	4 U	3.9 U	4 U	3.8 U	3.8 U
Aroclor 1221	NE	3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	4 U	3.9 U	4 U	3.8 U	3.8 U
Aroclor 1232	NE	3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	4 U	3.9 U	4 U	3.8 U	3.8 U
Aroclor 1242	NE	3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	4 U	3.9 U	4 U	3.8 U	3.8 U
Aroclor 1248	NE	3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	40 Y UY	3.9 U	4 U	3.8 U	3.8 U
Aroclor 1254	NE	3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	9.9 Y UY	68	3.9 U	9.9 Y UY	9.4 Y UY	9.5 Y UY
Aroclor 1260	NE	3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	53 P J	3.9 U	3.7 J	4.8	3.8 U
Total PCI (µg/kg Dry-Weigl		3.7 U	3.9 U	3.8 U	3.8 U	3.8 U	3.9 U	9.9 Y	121 P J <sup>5</sup>	3.9 U	3.7 J J <sup>5</sup>	4.8	9.5 Y
Total PCI	3s <sub>12</sub>				_			0.4			0.3 J <sup>6</sup>	0.3	1.0
(mg/kg OC	)												

#### Note(s

- 1. Laboratory data flags (Q1) are as follows:
  - U = analyte not detected at the reporting limit provided.
  - J = estimated concentration when the value is less than the RL.
  - Q = detected analyte with an initial or continuing calibration that does not meet established acceptance criteria.
  - Y = analyte not detected at the reporting limit provided. The reporting limit is raised due to chromatographic interferences.
  - P = Analyte detected on both chromatographic columns; RPD >40% with no chromatographic interference.
  - B = analyte detected in associated method blank at concentration greater than 1/2 RL, or 5% analyte concentration.
  - M = estimated value for analyte detected with poor spectral match.
- 2. Validation qualifiers (Q2) are defined as follows:
  - J = analyte positively identified; value is approximate concentration in sample.
- N = The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification.
- U = material was analyzed for, but was not detected above the level of the associated value.
- UJ = material was not detected; reporting limit is estimated and may be inaccurate or imprecise.
- UY = material was not detected; raised reporting limit.

- 3. Criteria obtained from Table 3 of Construction and Post-Construction Sediment Monitoring QAPP (AMEC et al. 2012).
- 4. = no carbon-normalized value was calculated when results for organic carbon were outside the normal carbon normalization range of 0.5 to 4.0%.
- If 20% of total detected Aroclors are qualified as estimated, the total calculated PCB concentration will also be considered estimated and assigned a "J" qualifier.
- If the total calculated PCB concentration is considered to be estimated and assigned a "J" qualifier, then the organic carbon normalized value will also be assigned a "J" qualifier.

#### Abbreviation(s)

- ft = feet
- HPAHs = high-molecular-weight polycyclic aromatic hydrocarbons
- LPAHs = low-molecular-weight polycyclic aromatic hydrocarbons
- mg/kg = milligrams per kilogram mg/kg OC = milligrams per kilogram organic carbon
- MLLW = mean lower low water
  NE = not established
  PCBs = polychlorinated biphenyls
- Q1 = laboratory qualifiers

- Q2 = validation qualifiers QAPP = Quality Assurance Project Plan RL = reporting limit RPD = relative percent difference SMS SQS = Washington Sediment
- Management Standards Sediment Quality Standards (173-204-320 WAC) μg/kg = micrograms per kilogram μg/kg Dry-Weight = micrograms per kilogram dry weight
- WAC = Washington Administrative Code

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#### DIOXINS AND FURANS ANALYTICAL RESULTS<sup>1, 2</sup>

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

	Sampling Area		A		n-water Wo							In-w		ging Area -5 ft MLL\	-	oles	
	Location	SD-	PCM001		SD-	PCM004		SD-PCM008		SD-	PCM010		SD-	-PCM015		SD-PCM01	19
	Monitoring Year	Year	r 0 (2015)		Year	r 0 (2015)		Year 0 (2015)		Yea	r 0 (2015)		Yea	r 0 (2015)		Year 0 (201	5)
	Collection Date		11/2015			11/2015		2/24/2015		1	11/2015			11/2015		2/24/2015	-
	Sample Depth (ft)		- 0.33			- 0.33		0 - 0.33		1	- 0.33			0.33		0 - 0.33	
	Sample ID		CM00115			CM00415		SD-PCM00815	5	_	CM01015			PCM01515		SD-PCM019	915
Analyte		Value	Q1	Q2	Value	Q1	Q2	Value Q1	Q2	Value	Q1	Q2	Value	Q1	Q2	Value Q1	
Dioxins and Furans (ng/kg)	TEF <sup>3</sup>																
2,3,7,8-TCDD	1		JEMPC			JEMPC		0.0252 U			JEMPC		0.0299			0.124 JEMPC	
2,3,7,8-TCDF	0.1	0.0438			0.0579			0.031 U		0.0818				JEMPC		0.0415 U	
1,2,3,7,8-PeCDD	1		JEMPC		0.03			0.0329 U		0.0439			0.0359			0.0592 JEMPC	
1,2,3,7,8-PeCDF	0.03		JEMPC		0.292	JEMPC		0.0717 BJEMPC	J	0.134			0.176			0.118 BJEMP	C J
2,3,4,7,8-PeCDF	0.3	0.0537	U		0.158	BJEMPC	U	0.0349 U		0.0658	BJEMPC	U	0.0778	BJ	U	0.0395 U	
1,2,3,4,7,8-HxCDD	0.1	0.0498			0.0579			0.031 U		0.0658	JEMPC		0.0299	U		0.0415 U	
1,2,3,6,7,8-HxCDD	0.1	0.0557	U		0.0699	BJEMPC	U	0.0329 U		0.201	BJEMPC	U	0.0559	BJ	U	0.101 BJEMF	N O
1,2,3,7,8,9-HxCDD	0.1	0.0995	JEMPC		0.0639	JEMPC		0.0388 JEMPC		0.104	JEMPC		0.0379	JEMPC		0.109 JEMPC	;
1,2,3,4,7,8-HxCDF	0.1	0.0896	BJ	J	0.124	BJEMPC	J	0.0349 U		0.156	BJEMPC	J	0.136	BJEMPC	J	0.0533 BJEMF	C J
1,2,3,6,7,8-HxCDF	0.1	0.145	BJEMPC	U	0.218	BJEMPC	U	0.0329 BJEMPC	U	0.138	BJEMPC	U	0.176	BJ	U	0.0987 BJEMP	C U
1,2,3,7,8,9-HxCDF	0.1	0.117	BJ	U	0.164	BJEMPC	U	0.0659 BJEMPC	U	0.144	BJEMPC	U	0.144	BJ	U	0.101 BJEMF	C U
2,3,4,6,7,8-HxCDF	0.1	0.0637	BJEMPC	J	0.108	BJ	J	0.0368 BJEMPC	J	0.0598	BJEMPC	J	0.128	BJEMPC	J	0.0454 U	
1,2,3,4,6,7,8-HpCDD	0.01	1.14	В	J	0.865	BJ	J	0.587 BJEMPC	U	4.69	В		0.862	BJ	J	1.73 B	U
1,2,3,4,6,7,8-HpCDF	0.01		BJEMPC	U		BJEMPC	U	0.095 BJEMPC	J		JEMPC		0.228		U	0.193 BJ	J
1,2,3,4,7,8,9-HpCDF	0.01	0.0438	J		0.0759	J		0.031 U		0.116	JEMPC		0.0579	JEMPC		0.0336 U	
OCDD	0.0003	8.77	В	U	5.46	В	U	3.76 B	U	31.8	В	J	6.47	В	U	9.62 B	U
OCDF	0.0003	0.392	J		0.25	J		0.0523 U		1.84	J		0.571	J		0.075 U	
Total HpCDD		3.17		J	2.42		J	1.48 EMPC	U	12.6			2		J	5.08	U
Total HpCDF		0.356	EMPC	J		EMPC	J	0.179 EMPC	J		EMPC		0.808	EMPC		0.259 EMPC	J
Total HxCDD			EMPC	J		EMPC	J	0.469 EMPC	J		EMPC			EMPC	J	1.9 EMPC	J
Total HxCDF		0.912	EMPC	J	2.07	EMPC	J	0.39 EMPC	J		EMPC	J	1.5	EMPC	J	0.7 EMPC	J
Total PeCDD		0.199			0.126	EMPC		0.0329 U			EMPC		0.0403	EMPC		0.421 EMPC	
Total PeCDF			EMPC	J		EMPC	J	0.333 EMPC	J		EMPC	J		EMPC	J	0.889 EMPC	J
Total TCDD		0.972				EMPC		0.565		0.746				EMPC		0.64 EMPC	
Total TCDF			EMPC	J		EMPC	J	0.303 EMPC	J		EMPC	J		EMPC	J	0.896 EMPC	J
WHO 2005 <sup>3</sup> TEQ (ND = 0 inc	luding EMPC)	0.27			0.28			0.03		0.35			0.12			0.26	
WHO 2005 <sup>3</sup> TEQ (ND = 1/2 E		0.28			0.3			0.07		0.37			0.15			0.27	

#### Note(s)

- 1. Laboratory data flags (Q1) are as follows:
  - U = analyte not detected at the reporting limit provided.
  - B = analyte detected in an associated method blank at a concentration greater than 1/2 the RL or 5% of the analyte concentration in the sample.
  - EMPC = value calculated for 2,3,7,8-substituted isomers for which the quantitation and/or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria.
  - J = estimated concentration when the value is less than the RL.
- 2. Validation qualifiers (Q2) are defined as follows:
- J = analyte positively identified; value is approximate concentration in sample.
- U = material was analyzed for, but was not detected above the level of the associated value.
- 3. Source: Van den Berg et al. 2006.

#### Abbreviation(s)

EDL = estimated detection limit

EMPC = estimated maximum possible concentration

ft = feet

MLLW = mean lower low water

ND = non detected

ng/kg = nanograms per kilogram

Q1 = laboratory qualifiers

Q2 = validation qualifiers

RL = reporting limit

TEF = toxicity equivalency factors

TEQ = toxic equivalency quotient

#### **GRAIN-SIZE ANALYSIS RESULTS**

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

Sampling Area	Abo			ter Work MLLW ar			-	.w		In-water Dredging Area Samples Below -5 ft MLLW							
Location	SD-PC	M00	2	SD-PCM005			SD-PCM007		SD-PCM011			SD-PCM014			SD-PCM018		
Monitoring Year	Year 0 (2015)		Year 0 (2015)		Year 0 (2015)		5)	Year 0 (2015)			Year 0 (2015)			Year 0	(2015)		
Collection Date	3/10/2015		3/10/2015		2/24/	2015		3/10/2015			3/10/2015			2/24/	/2015		
Sample Depth (ft)	0 - 0.33		0 - 0.33		0 - 0.33		0 - 0.33			0 - 0.33			0 - 0.33				
Sample ID	SD-PCN	1002			M005	15			SD-PCM01115		15	SD-PCM01415		15	SD-PCM01815		
Analyte	Value	Q1	Q2	Value	Q1	Q2	Value	Q1	Q2	Value	Q1	Q2	Value	Q1	Q2	Value	Q1 Q2
Grain Size (%)																	
Gravel	26.7			27.5			25.8			28			17.6			22.9	
Very Coarse Sand	26.6			24.7			25.6			28			25.2			23.6	
Coarse Sand	26.8			27.4			25.1			26.3			34.8			28.2	
Medium Sand	14.6			16			17.7			14.5			19.4			19.8	
Fine Sand	2.5			2.6			3.0			2.3			2.4			3.4	
Very Fine Sand	0.4			0.5			0.3			0.4			0.4			0.7	
Coarse Silt	2.3	U		1.1	J		2.4	J		0.5	J		0.2	U		1.4	U
Medium Silt	2.3	U		1.1	J		2.4	J		0.5	J		0.2	U		1.4	U
Fine Silt	2.3	U		1.1	J		2.4	J		0.5	J		0.2	U		1.4	U
Very Fine Silt	2.3	U		1.1	U		2.4	U		0.5	U		0.2	U		1.4	U
8-9 Phi Clay	2.3	U		1.1	U		2.4	U		0.5	U		0.2	U		1.4	U
9-10 Phi Clay	2.3	U		1.1	U		2.4	U		0.5	U		0.2	U		1.4	U
> 10 Phi Clay	2.3	U		1.1	U		2.4	_		0.5	U		0.2	U		1.4	U
Total Fines	2.3			1.1			2.4			0.5			0.2			1.4	

#### Note(s)

Laboratory data flags (Q1) are as follows:
 U = analyte not detected at the reporting limit provided.

2. No validation qualifiers (Q2) assigned.

#### Abbreviation(s)

ft = feet
MLLW = mean lower low water

Q1 = laboratory qualifiers Q2 = validation qualifiers

LTM Appendix Tables Page 1 of 1

#### FREQUENCY OF DETECTION OF CHEMICAL ANALYTES

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

Analida	SMS SQS	Number of	Number of	Minimum Detected Value	Maximum Detected Value
Analyte	Criteria	Analyses	Detections	Detected value	Detected Value
Conventionals				T	T -
Total Organic Carbon (percent)	_	40	40	0.034	8.7
Metals (mg/kg)					
Arsenic	57	40	40	1.2	15
Cadmium	5.1	40	22	0.2	0.5
Chromium	260	40	40	13.2	34.5
Copper	390	40	40	11.1	50
Lead	450	40	9	2	20
Mercury	0.41	40	6	0.02	0.1
Silver	6.1	40	0	_	-
Zinc	410	40	40	25	138
Non-ionizable Organic Compounds	•				
Aromatic Hydrocarbons (µg/kg)					
Total LPAHs					
Naphthalene	2100	40	2	12	56
Acenaphthylene	1300	40	0	_	-
Acenaphthene	500	40	2	5.6	17
Fluorene	540	40	2	7.5	18
Phenanthrene	1500	40	7	11	130
Anthracene	960	40	3	5.8	110
2-Methylnaphthalene	670	40	1	6.7	6.7
Total HPAHs					
Fluoranthene	1700	40	9	4.8	140
Pyrene	2600	40	8	6.8	130
Benz[a]anthracene	1300	40	3	7.8	40
Chrysene	1400	40	5	7.5	110
Total benzofluoranthenes	3200	40	5	10	130
Benzo[a]pyrene	1600	40	3	6.9	37
Indeno[1,2,3-c,d]pyrene	600	40	3	6.5	29
Dibenzo[a,h]anthracene	230	40	8	2.5	13
Benzo[g,h,i]perylene	670	40	5	12	39
Chlorinated Benzenes (µg/kg)					
1,2-Dichlorobenzene	35	40	4	2.8	3.5
1,4-Dichlorobenzene	110	40	3	2.5	3.4
1,2,4-Trichlorobenzene	31	40	3	2.6	3.5
Hexachlorobenzene	22	40	3	3.2	3.8
Phthalate Esters (µg/kg)					
Dimethyl phthalate	71	40	2	2.7	3.1
Diethyl phthalate	200	40	5	19	76
Di-n-butyl phthalate	1400	40	0	_	_
Butyl benzyl phthalate	63	40	12	2.5	59
Bis[2-ethylhexyl] phthalate	1300	40	4	29	410
Di-n-octyl phthalate	6200	40	1	40	40
Miscellaneous (µg/kg)					
Dibenzofuran	540	40	1	5.6	5.6
Hexachlorobutadiene	11	40	3	2.4	3
N-nitrosodiphenylamine	28	40	0	_	_

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#### FREQUENCY OF DETECTION OF CHEMICAL ANALYTES

Post-Construction Surface Sediment Monitoring—Year 0
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure and Habitat Project
Boeing Plant 2
Seattle/Tukwila, Washington

Analyte	SMS SQS Criteria	Number of Analyses	Number of Detections	Minimum Detected Value	Maximum Detected Value
Ionizable Organic Compounds	s (µg/kg)	<u> </u>	ı	l	l .
Phenol	420	40	11	8.9	570
2-Methylphenol	63	40	1	12	12
4-Methylphenol	670	40	4	19	130
2,4-Dimethylphenol	29	40	0	_	_
Pentachlorophenol	360	40	2	13	18
Benzyl alcohol	57	40	3	28	360
Benzoic acid	650	40	6	62	2600
PCBs (µg/kg)	•		•	•	•
Aroclor 1016	_	40	0	_	_
Aroclor 1221	_	40	0	_	_
Aroclor 1232	_	40	0	_	_
Aroclor 1242	_	40	0	_	_
Aroclor 1248	_	40	0	_	_
Aroclor 1254	_	40	3	5.2	68
Aroclor 1260	_	40	5	3.6	53
Dioxins and Furans (pg/kg)			•		•
2,3,7,8-TCDD	_	6	0	_	_
2,3,7,8-TCDF	_	6	1	0.0818	0.0818
1,2,3,7,8-PeCDD	_	6	0	_	_
1,2,3,7,8-PeCDF	_	6	2	0.134	0.176
2,3,4,7,8-PeCDF	_	6	1	0.0778	0.0778
1,2,3,4,7,8-HxCDD	_	6	1	0.0579	0.0579
1,2,3,6,7,8-HxCDD	_	6	1	0.0559	0.0559
1,2,3,7,8,9-HxCDD	_	6	0	_	_
1,2,3,4,7,8-HxCDF	-	6	1	0.0896	0.0896
1,2,3,6,7,8-HxCDF	_	6	1	0.176	0.0176
1,2,3,7,8,9-HxCDF	_	6	2	0.117	0.144
2,3,4,6,7,8-HxCDF	_	6	1	0.108	0.108
1,2,3,4,6,7,8-HpCDD	_	6	5	0.862	4.69
1,2,3,4,6,7,8-HpCDF	_	6	2	0.193	0.228
1,2,3,4,7,8,9-HpCDF	_	6	2	0.0438	0.0759
OCDD	_	6	6	3.76	31.8
OCDF	_	6	4	0.25	1.84
Total HpCDD	_	6	5	2	12.6
Total HpCDF	_	6	0	_	_
Total HxCDD	_	6	0	_	_
Total HxCDF	_	6	0	_	_
Total PeCDD	_	6	0	_	_
Total PeCDF	_	6	0	_	_
Total TCDD	_	6	1	0.565	0.565
Total TCDF	_	6	0	_	_

#### Abbreviation(s)

HPAHs = high-molecular-weight polycyclic aromatic hydrocarbons LPAHs = low-molecular-weight polycyclic aromatic hydrocarbons

mg/kg = milligrams per kilogram PCBs = polychlorinated biphenyls

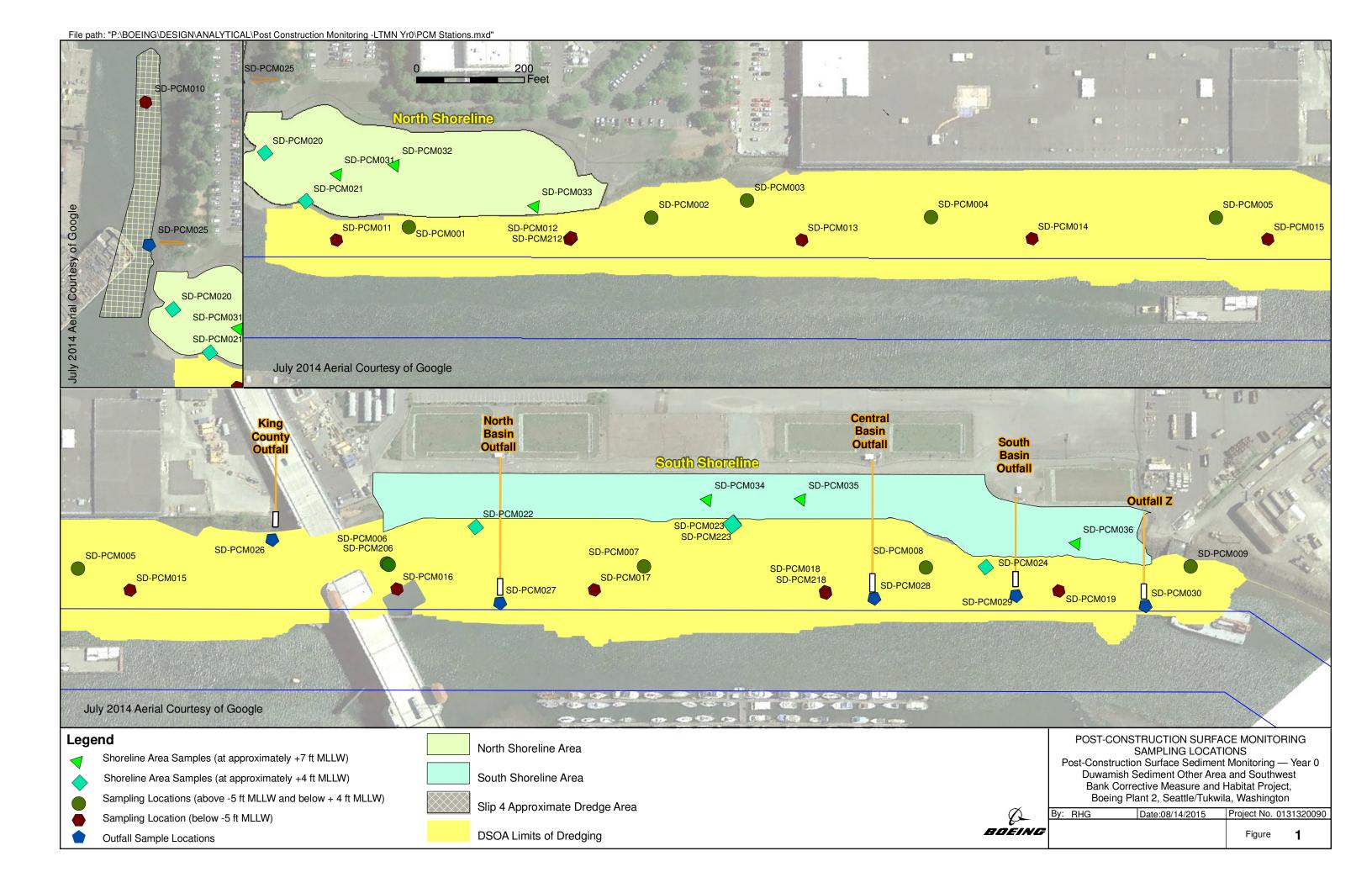
pg/kg = picograms per kilogram

SMS SQS = Washington Sediment Management Standards Sediment Quality Standards (173-204-320 WAC)

μg/kg = micrograms per kilogram

WAC = Washington Administrative Code

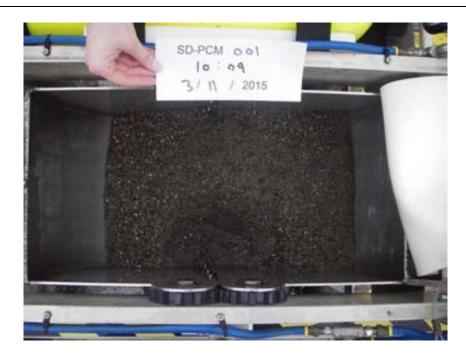
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	QUALITATIVE	SAMPLE CHAR	RACTERIST	ics	F	age of
Coordinate	Datum	Date (mm/dd/yy)	Project L	ocation	Sample Identi Numbe	
A State Plane, N Zone, NAD 8	3, Survey Ft	2-11-15	Boeing PL2		SD-PCM 00 \	15
	Coordinates		Water	Depth		Time
North		East	Depth	Unit Reg	Gear	
198117	127	3101	11,2	f t 1	0.2 Grab	1009
Penetration 8	T	Surficial	Wood Estimate			
Penetration Depth Unit Initials & PO	Weather LE	Contact I		*		
8 cm (1)	c/andy	Contact	- Units		X5 =	
urficial sediment characteris	tion.			-0.7.0		
urriciai sediment characterisi						
Biological:	% Debris:	%	Oil Sheen:	None	Trace (<5%)	
Moisture						
Very Wet Wet	Moist Dan	mp Dry				
Color		(Circle m	ajor & underlin	e modifyin	g)	
Light Medium	Dark	Olive Gray	Brown	Black	Other	
Major Constituent		(Circle m	ajor & underlin	e modifyin	g)	
Fine Medium	Coarse	Gravel Sa	nd Silt	Cla	y	
Minor Constituent with trac	ie 🥏	7	71			
million Comatitudent With hac						
Fine Medium	Coarse)	Gravel Sa	nd Silt	Cla	у	
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Ve		ose Medium (	Dense D	ense	Very Dense Very Stiff	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Ve	ery Loose Loo	Medium I	Dense D	ense	Very Dense	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color	ery Loose Loo ery Soft Sof	mp Dry (Circle m	Dense Destiff St	ense uff e modifyln	Very Dense Very Stiff	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet	ery Loose Loo ery Soft Sof	Medium I ft Medium S	Dense Di Stiff St	ense uff	Very Dense Very Stiff	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent	ery Loose Loo ery Soft Sof  Moist Dar	mp Dry  (Circle m Olive Gray	Dense Di Stiff St rajor & underlin Brown	ense tiff e modifyin Black te modifyin	Very Dense Very Stiff  9) Other	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium	ery Loose Loo ery Soft Sof	mp Dry  (Circle m Olive Gray	Dense Destiff State	ense uff e modifyin Black	Very Dense Very Stiff  9) Other	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	ery Loose ery Soft Sof  Moist Dar  Dark  Coarse	mp Dry  (Circle m Olive Gray  (Circle m Gravel Sá	Dense Destiff Si	ense uff Black e modifyin Cla	Very Dense Very Stiff  9) Other 9)	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium	ery Loose Loo ery Soft Sof  Moist Dar  Dark  Coarse	mp Dry  (Circle m Olive Gray  (Circle m Gravel Sá	Dense Di Stiff St rajor & underlin Brown	ense tiff e modifyin Black te modifyin	Very Dense Very Stiff  9) Other 9)	Hard
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	ery Loose ery Soft Sof  Moist Dar  Dark  Coarse	mp Dry  (Circle m Olive Gray  (Circle m Gravel Sá	Dense Destiff Si	ense uff Black e modifyin Cla	Very Dense Very Stiff  9) Other 9)	
Fine Medium  absurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	ery Loose Loo ery Soft Sof  Moist Dar  Dark  Coarse  Coarse  Mobility  Coarse  Debris:	Medium Compose Medium Somp Dry  (Circle modium Gravel Sa	Dense Destiff State of Stiff State o	ense uff  e modifyin Black e modifyin Cla	Very Dense Very Stiff  9) Other  9) Y Trace (<5%)	
Fine Medium  absurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	ery Loose Loo ery Soft Sof  Moist Dar  Dark  Coarse  Coarse  Mobility  Coarse  Debris:	Medium II  Medium II  Medium II  Medium II  Medium II  Medium II  Circle m  Olive Gray  (Circle m  Gravel Sa  Gravel Sa	Dense Destiff State of Stiff State o	ense uff  e modifyin Black e modifyin Cla	Very Dense Very Stiff  9) Other  9) Y Trace (<5%)	
Fine Medium  absurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	ery Loose Loo ery Soft Sof  Moist Dar  Dark  Coarse  Coarse  Mobility  Coarse  Coarse	Medium II  Medium II  Medium II  Medium II  Medium II  Medium II  Circle m  Olive Gray  (Circle m  Gravel Sa  Gravel Sa	Dense	ense tiff le modifyin Black le modifyin Cla	Very Dense Very Stiff  9) Other  9) Y Trace (<5%)	
Fine Medium  absurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	ery Loose Loo ery Soft Sof  Moist Dar  Dark  Coarse  Coarse  Mobility  Coarse  Coarse	Medium II  Medium II  Medium II  Medium II  Medium II  (Circle m Olive Gray  (Circle m Gravel Sa  Gravel Sa  ———————————————————————————————————	Dense	ense  tiff  te modifyin Black te modifyin Cla	Very Dense Very Stiff  9) Other  9) Y Trace (<5%)	
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	ery Loose Loo ery Soft Sof  Moist Dar  Dark  Coarse  Coarse  Mobility  Coarse  Coarse	Medium II  Medium II  Medium II  Medium II  Medium II  (Circle m Olive Gray  (Circle m Gravel Sa  Gravel Sa  ———————————————————————————————————	Dense	ense  tiff  te modifyin Black te modifyin Cla	Very Dense Very Stiff  9) Other  9) Y Trace (<5%)	
Fine Medium  ubsurface sediment characte  Density / Consistency  Sand / Gravel - Vo  Silt / Clay - Vo  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	ery Loose Loo ery Soft Sof  Moist Dar  Dark  Coarse  Coarse  Mobility  Coarse  Coarse	Medium II  (Circle m Grayel Sa  Gravel Sa  AmecFW SD-PCM QSC For	Dense	ense uff  e modifyin Black e modifyin Cla  Cla  None	Very Dense Very Stiff  g) Other  g) Y Trace (<5%)	



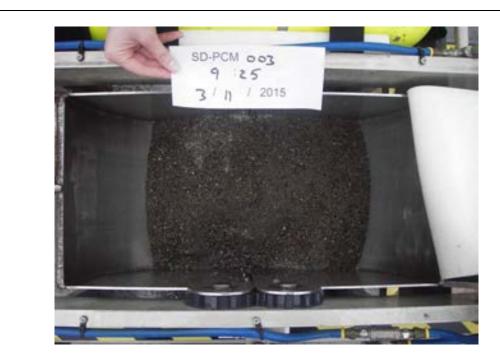
Station SD-PCM001

			ACTERISTICS		Pa	5/2 X X X
Coordinate D	atum	Date (mm/dd/yy)	Project Loca		Sample Identifi Number	cation
A State Plane, N Zone, NAD 83,	Survey Ft	3-10-15	Boeing PL2	SD	-PCM_00 2	15
	Coordinates		Water Dep	th		Time
North		East	Depth U	Init Rep	Gear	
197828	127344	18	4.0 f	t )	0.2 Grab	1323
Penetration Pepth Unit Initials S N	Weather ES	Surficial V Contact P	Vood Estimate: oints		X5 = _	
rficial sediment characteristic Biological:	% Debris:	0%	Oil Sheen:	None	Trace (<5%)	
Moisture Very Wet Wet	Moist Damp	Dry				
Color Light Medium	Dark	(Circle ma Olive Gray	Brown Bl	odifying) ack	Other	
Major Constituent Fine Medium	Coarse	(Circle ma Gravel San	ajor & underline m	odifying) Clay		
Minor Constituent with trace	Coarse	Gravel San	nd Silt	Clay		
bsurface sediment characteri		Graver Sar		Ciay		
Density / Consistency  Sand / Gravel - Ven		Medium D Medium S	ense Dens		Very Dense Very Stiff	Hard
Density / Consistency  Sand / Gravel - Ven	y Loose Loose	Medium D Medium S	ense Dens tiff Stiff	e		Hard
Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven  Moisture Very Wet  Color	y Loose Loose y Soft Soft  Moist Damp	Medium D  Medium S  Dry  (Circle material)	ense Dens tiff Stiff ajor & underline m Brown B	e nodifying) lack	Very Stiff	Hard
Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven  Moisture Very Wet  Color Light  Major Constituent	y Loose y Soft  Moist  Damp  Dark  Coarse	Medium D  Medium S  Dry  Clircle ma  Clircle ma  (Circle ma	ense Dens tiff Stiff ajor & underline n Brown B ajor & underline n d Silt	e nodifying) lack nodifying)	Very Stiff	Hard
Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	y Loose y Soft  Moist  Damp  Dark  Coarse	Medium D  Medium S  Dry  (Circle material Circle material Circ	ense Dens tiff Stiff ajor & underline n Brown B ajor & underline n d Silt	e nodifying) lack nodifying) Clay	Very Stiff	Hard

Amr/Field Forms/QSC



	Coore	dinate [	Datum			Date n/dd/yy)	Project	Location		Sample Ident Number	
A State Plane,	N Zone,	NAD 83	3, Survey F	t	-	11-15	Boeing PL	2	sı	D-PCM_ 00	315
			Coordin	ates			Wate	er Depth	П		Time
	North			******	East		Dept	h Unit	Rep	Gear	
19773	3			12	209Et		9.8	ft	1	0.2 Grab	925
Penetration		api		92	٦ :	Surficial Wo	od Estima	ite:			
Depth Unit	Initials	Sulfide	Weath	Fines series	8	Contact Poi	nts				
√ c m	614		cloud	7						X5 =	
urficial sedime	ent chara	cteristi	ics:								
Biological:	-	)	%	Debris:	0	%	Oil Sheer	. N	one)	Trace (<5%)	
							0.11001		-	11000 ( -010)	0 )
Moisture Very Wet	w	(te	Moist	Dar	mp Dry						
1000 PARIS		-	1110101						en en e		
Color	Mediu	m	Dark		Olive	Circle majo Gray	Brown	line mod Black		Other	
			-				$\leq$				3.4. A. T.
Major Const	ituent Mediu	m	Coarse	e .	Gravel	Circle majo Sand	r & under		ifying) Clay		
20002							/	20	,		
Minor Const Fine	ituent wi Mediu	Management .	Coarse		Gravel	Sand	Silt		Clay		
			/								
						-	< -	_			
ubsurface sed	liment ch	aracte	ristics:				< -	_			
bsurface sed			ristics:				< -				
Density / Co		y		/Lox	ose	Medium Den	se	Dense		Very Dense	
Density / Co	nsistenc	y : Ve	ery Loose	Lox	/	Medium Den				Very Dense	
Density / Co	nsistenc	y : Ve		Loc				Dense Stiff		Very Dense	Hard
Density / Co Sand Si Moisture	/ Gravel -	y : Ve : Ve	ery Loose ery Soft	Sof	n I	Medium Den				-51005000000000000000000000000000000000	
Density / Co	/ Gravel -	y : Ve : Ve	ery Loose		n I	Medium Den				-51005000000000000000000000000000000000	
Sand Si Moisture Very Wet	/ Gravel -	y : Ve : Ve	ery Loose ery Soft Moist	Sof	mp Dry	Medium Den Medium Stiff	or & under	Stiff		Very Stiff	
Sand Sand Si Moisture Very Wet	/ Gravel -	y : Ve : Ve	ery Loose ery Soft	Sof	mp Dry	Medium Den		Stiff		Very Stiff	
Sand Si Moisture Very Wet Color Light Major Const	/ Gravel -	y : Ve : Ve	ery Loose ery Soft Moist Dark	Sof	mp Dry Olive	Medium Den Medium Stiff (Circle majo Gray	or & under Brown	Stiff line mod Black	lifying	Very Stiff Other	
Sand Si Moisture Very Wet Color Light	/ Gravel -	y : Ve : Ve	ery Loose ery Soft Moist	Sof	mp Dry	Medium Den Medium Stiff (Circle majo Gray	or & under Brown	Stiff line mod Black		Very Stiff Other	
Sand Si Moisture Very Wet Color Light Major Const	/ Gravel - ilt / Clay - Medicituent Medicituent wi	y ve ve ve	ery Loose ery Soft  Moist  Dark  Coarse	Sof	mp Dry Olive Gravel	Medium Den Medium Stiff (Circle majo Gray (Circle majo Sand	Brown Sit	Stiff line mod Black	lifying Clay	Very Stiff Other	
Moisture Very Wet  Color Light  Major Const	/ Gravel - ilt / Clay - W Medit	y ve ve ve	ery Loose ery Soft  Moist  Dark  Coarse	Sof	mp Dry Olive	Medium Den Medium Stiff (Circle majo Gray (Circle majo Sand	or & under Brown	Stiff line mod Black	lifying	Very Stiff Other	
Moisture Very Wet  Color Light  Major Const Fine  Minor Const	/ Gravel - ilt / Clay - Medicituent Medicituent wi	y ve ve ve	ery Loose ery Soft  Moist  Dark  Coarse	Sof	mp Dry Olive Gravel	Medium Den Medium Stiff (Circle majo Gray (Circle majo Sand	Brown Sit	Stiff line mod	lifying Clay	Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Const Fine  Minor Const Fine  Biological:  Comments:	/ Gravel - ilt / Clay - W Medic ituent Medic ituent wi	y Ve Ve	ery Loose ery Soft  Moist  Dark  Coarse  Coarse	Sof Dar e e Debris:	mp Dry Olive Gravel	Medium Den Medium Stiff (Circle majo Gray (Circle majo Sand Sand	or & under Brown Sil Sil	Stiff  Stiff  Slack  Sl	Clay Clay	Other	Hard
Moisture Very Wet  Color Light  Major Const Fine  Minor Const Fine  Biological:	/ Gravel - ilt / Clay - W Medic ituent Medic ituent wi	y ve ve ve	ery Loose ery Soft  Moist  Dark  Coarse  Coarse	Sof Dar e e Debris:	mp Dry Olive Gravel	Medium Den Medium Stiff (Circle majo Gray (Circle majo Sand	or & under Brown  Sil  Oil Sheel	Stiff  Stiff  Stiff  Black  Inc. (N	Clay One BP2	Other	Hard
Moisture Very Wet  Color Light  Major Const Fine  Minor Const Fine  Biological:  Comments:	/ Gravel - ilt / Clay - W Medic ituent Medic ituent wi	y Ve Ve	ery Loose ery Soft  Moist  Dark  Coarse  Coarse	Sof Dar e e Debris:	mp Dry Olive Gravel	Medium Den Medium Stiff (Circle majo Gray (Circle majo Sand Sand	or & under Brown Sil Oil Sheet	Stiff  Stiff  Stiff  Black  Inc. (N	Clay One BP2	Other	Hard
Moisture Very Wet  Color Light  Major Const Fine  Minor Const Fine  Biological:  Comments:	/ Gravel - ilt / Clay - W Medic ituent Medic ituent wi	y Ve Ve	ery Loose ery Soft  Moist  Dark  Coarse  Coarse	Sof Dar e e Debris:	mp Dry Olive Gravel	Medium Den Medium Stiff (Circle majo Gray (Circle majo Sand Sand	or & under Brown Sil Sil Oil Sheer AmecFi	Stiff  Jine mod t  In: N  W Proj. W00315	Clay Clay SP2 I	Other	Hard



Station SD-PCM003

			w.	JALI	IIAI				,,,,	ERIST		-97		Pag	
	Coore	dinate	Datun	n			(m	Date m/dd/yy)		Project L	ocation		Sample Ide Nun		tion
A State Plane	, N Zone, I	NAD 8	83, Sur	rvey Ft	1		3-1	-15	80	eing PL2		St	PCM 00	4	_15
			Co	ordina	ates					Water	Depth			T	Time
	North						East			Depth	Unit	Rep	Gear		10000000
1974	81					127	3835		- V	11-4	f t	1	0.2 Grab	9	110
Penetration		e l	T			us		Surficial V	Wood	Estimate	:				
Depth Unit	Initials	Sulfide	١	Weath	er	Fines (%)		Contact P	oints						
12 c m	C24J		· V	Nie						50	_		X 5 =	_	
urficial sedim	ent chara	cteris					0								
Biological:		1	9	16	Debri	s:	0	%	Oil	Sheen:	No	ne/	Trace (<5	%)	
Moisture Very We	ı w	et	N	Moist		Damp	Dry								
Color Light	Mediu	im		Dark			Olive	(Circle ma		underlin own	e mod Black		Other		
Major Cons Fine	tituent Mediu	ım	(	Coarse	9		Gravel	(Circle ma	- 4	underlin Silt	e mod	fying) Clay			
Minor Cons Fine	tituent wi	The second		Coarse						Silt		61-			
ubsurface se	diment ch	aract	teristic		-		Gravel	Sar		- Sit		Clay			
Density / Co		y	teristic	s:	(	Loose		Medium D		_	ense	Clay	Very Den	se	
Density / Co	onsistency	y : V		:s: ::oose	(	Loose	2		ense	0	ense uff	Clay	Very Den		Hard
Density / Co	onsistency // Gravel -	y : V : V	Very Lo	:s: ::oose	(		2	Medium D	ense	0	931774	Clay			Hard
Density / Co	onsistency // Gravel -	y : V : V (et)	Very Lo	es: oose oft	(	Soft	Dn	Medium D	ense	D Si	uff	ifying)	Very Stiff		Hard
Density / Co	onsistency I/Gravel - Silt / Clay - t W	: V : V	Very Lo	oose oft Moist	(	Soft	Dry	Medium S  (Circle may  (Circle may)	ense tiff ajor & Br	D Si underlin	iff e mod Black	ifying)	Very Stiff		Hard
Sand Sand Moisture Very We Color Light Major Cons	Mediculatituent willtuent	et v	Very Lo	oose oft Moist Dark Coarse	8	Soft	Dry Olive Gravel	Medium S  (Circle m. Gray (Circle m. Sai	ense tiff ajor & Br	underlin own underlin	iff e mod Black	ifying) ifying) Clay	Very Stiff		Hard
Moisture Very We Color Light Major Cons	Mediu	et v	Very Lo	oose oft Moist	8	Soft	) Olive	Medium S  (Circle m. Gray (Circle m. Sai	ense tiff ajor & Br ajor &	underlin own	iff e mod Black	ifying)	Very Stiff		Hard
Moisture Very We  Color Light  Major Cons Fine  Minor Cons	Mediculatituent willtuent	et v	Very Lo	oose oft  Moist  Coarse	8	Soft	Dry Olive Gravel	Medium S  (Circle m. Gray (Circle m. Sai	ense stiff ajor & Br ajor & and	underlin own underlin	e mod Black	ifying) ifying) Clay	Very Stiff		Hard
Moisture Very We  Color Light  Major Cons Fine  Minor Cons Fine	Mediu	y : V : V th tra	Very Lo	oose oft  Moist  Coarse  Coarse	Debri	Soft Damp	Dry Olive Gravel	Medium S  (Circle magnet)  (Circle magnet)  Sai	ense stiff ajor & Br ajor & nd	underlin own Silt Silt Silt	e mod Black e mod	ifying) Clay Clay	Other		Hard
Moisture Very We Color Light Major Cons Fine Minor Cons Fine Biological:	Mediu	y : V : V th tra	Very Lo	oose oft  Moist  Coarse  Coarse	Debri	Soft Damp	Olive Gravel	Medium S  (Circle magnet)  (Circle magnet)  Sai	ense stiff ajor & Br ajor & nd	underlin own Silt Silt I Sheen:	e mod Black e mod	ifying) Clay Clay one	Other Trace (<	5%)	
Moisture Very We Color Light Major Cons Fine Minor Cons Fine Biological:	Mediu	y : V : V th tra	Very Lo	oose oft  Moist  Coarse  Coarse	Debri	Soft Damp	Olive Gravel	Medium S  (Circle magnet)  (Circle magnet)  Sai	ense stiff ajor & Br ajor & nd	underling Silt Silt Silt Silt Sheen:	e mod Black e mod	ifying) Clay Clay one	Other	5%)	
Moisture Very We Color Light Major Cons Fine Minor Cons Fine Biological:	Mediu	y : V : V th tra	Very Lo	oose oft  Moist  Coarse  Coarse	Debri	Soft Damp	Olive Gravel	Medium S  (Circle magnet)  (Circle magnet)  Sai	ense stiff ajor & Br ajor & nd	underlin own silt Silt Silt Sheen:	e mod Black e mod	clay Clay Clay roj. B	Other Trace (<	5%)	



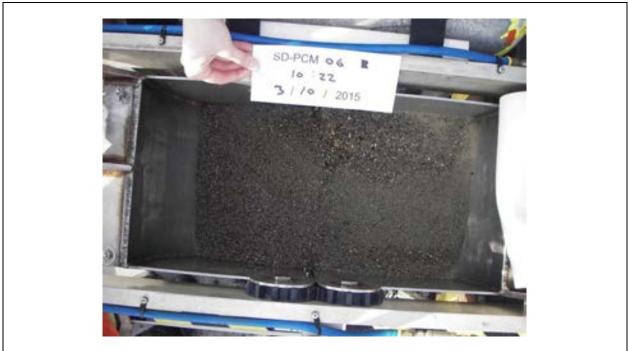
Station SD-PCM004

								200	Page of _
Coordinate Da	itum		Da (mm/d		Project Lo	cation		Sample Identi Numbe	
A State Plane, N Zone, NAD 83,	Survey Ft		3-10	-15 B	oeing PL2		st	D-PCM 905	15
	Coordinates	5			Water 0	epth			Time
19□12□ North			East		Depth	Unit	Rep	Gear	195916
1974228		127423	8		5.2	f t	١	0.2 Grab	1246
Penetration 8		40	Sur	ficial Wood	Estimate:				
Penetration Depth Unit Initials	Weather	Fines (%)	Cor	ntact Points	3				
12 cm 650	clonky				200	-5-1		X5 =	
urficial sediment characteristic	s:								
Pinton (2)			0)			6		T	
Biological:	_% Del	bris:		_% 0	il Sheen:	No	one )	Trace (<5%)	-
Moisture	0.28/2764	(20)	2						
Very Wet Wet	Moist	Damp	Dry						
Color			(Ci	rcle major l					
Light Medium	Dark		Olive	Gray B	rown	Black		Other	
Major Constituent			(Ci	rcle major a	underline	e modi	fying)		
Fine Medium	Coarse		Gravel	Sand	Silt		Clay	-	
Minor Constituent with trace					2				
Fine Medium	Coarse		Gravel	Sand	Silt		Clay	25	
Density / Consistency									
	Loose	Loose	⊃ Me	dium Dense	De	ense		Very Dense	
Sand / Gravel - Very	Loose Soft	Loose		dium Dense	De St			Very Dense Very Stiff	Hard
Sand / Gravel - Very									Hard
Sand / Gravel - Very Silt / Clay - Very Moisture	Soft	Soft	Me Dry		St	rr	ifying)	Very Stiff	Hard
Sand / Gravel - Very Silt / Clay - Very Moisture Very Wet Wet	Soft	Soft	Me Dry (Ci	dium Stiff	St	rr		Very Stiff	Hard
Sand / Gravel - Very Silt / Clay - Very Moisture Very Wet Wet  Color Light Medium	Soft Moist	Soft	Dry (Ci Olive	dium Stiff rcle major o Gray B	& underlin	iff e modi Black		Very Stiff Other	Hard
Sand / Gravel - Very Silt / Clay - Very Moisture Very Wet Wet Color	Soft Moist	Soft	Dry (Ci Olive	dium Stiff	& underlin	iff e modi Black		Very Stiff Other	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium	Soft Moist Dark	Soft	Dry (Ci Olive (Ci	dium Stiff role major Gray B role major	& underlin	iff e modi Black	ifying)	Very Stiff Other	Hard
Sand / Gravel - Very Silt / Clay - Very Moisture Very Wet Wet  Color Light Medium  Major Constituent	Soft Moist Dark	Soft	Dry (Ci Olive (Ci	dium Stiff role major Gray B role major	& underlin	iff e modi Black	ifying)	Very Stiff Other	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	Moist Dark Coarse	Soft	Dry (Ci Olive (Ci Gravel	rcle major gray Brcle major Sand	& underlin krown & underlin Silt	e modi Black e modi	(fying) Clay Clay	Very Stiff Other	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Soft  Moist  Dark  Coarse  Coarse  De	Soft Damp	Dry (Ci Olive (Ci Gravel	rcle major Gray B rcle major Sand	& underlin Frown Sit Sit Sit	e modi Black e modi	ifying) Clay	Very Stiff Other	
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	Soft  Moist  Dark  Coarse  Coarse  De	Soft Damp	Dry (Ci Olive (Ci Gravel	rcle major Gray B rcle major Sand	& underlin Frown & underlin Silt Silt Silt	e modi Black e modi	Clay	Very Stiff Other Trace (<5%)	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Soft  Moist  Dark  Coarse  Coarse  De	Soft Damp	Dry (Ci Olive (Ci Gravel	rcle major of Gray Brocle major Sand	& underlin frown Sit Sit Sit Sit Sheen:	e modi Black e modi	Clay Clay	Other	
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Soft  Moist  Dark  Coarse  Coarse  De	Soft Damp	Dry (Ci Olive (Ci Gravel	rcle major of Gray Brocle major Sand	& underlin frown Sit Sit Sit Sit Sheen:	e modi Black e modi	Clay Clay	Other	
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Soft  Moist  Dark  Coarse  Coarse  De	Soft Damp	Dry (Ci Olive (Ci Gravel	rcle major of Gray Brocle major Sand	& underlin Frown Silt Silt Silt Sheen:	e modi Black e modi Proj. I	Clay Clay Done BP2 P	Other Trace (<5%)	
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Soft  Moist  Dark  Coarse  Coarse  De	Soft Damp	Dry (Ci Olive (Ci Gravel	rcle major of Gray Brocle major Sand	& underlin frown Sit Sit Sit Sit Sheen:	e modi Black e modi Proj. I	Clay Clay Done BP2 P	Other Trace (<5%)	

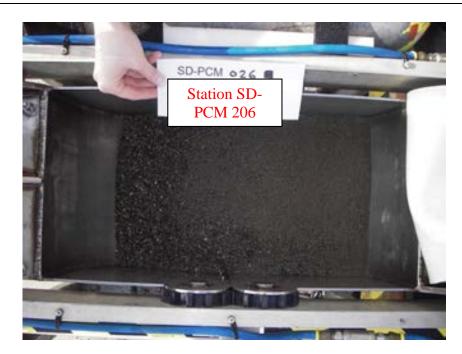


Station SD-PCM005

QUA	LITATIVE SA	MPLE CHA	RACTERI	STICS		F	Page of
Coordinate Datum		Date (mm/dd/yy)	Proje	ct Locatio	n	Sample Identi Numbe	
NA State Plane, N Zone, NAD 83, Survey	Ft	3-10-15	Boeing F	L2	s	D-PCM 996	15
Coord	inates		Wa	ter Depth	Т	T	Time
19 45 North	1204002	East	De		Rep	Gear	\$30KB
196749	127466		10.	7 1	1	0.2 Grab	1022
Penetration  Depth Unit Initials S S West  2.2 c m 6.1 m 6.1 m 6.1 m 6.1 m	ather E %	Surficia Contact	Wood Estin	nate:	_	X5 =	%
Biological:%	Debris:	<u>&gt;_</u> %	Oil She	en: N	lone )	Trace (<5%)	90
Moisture Very Wet Wet Mois  Color Light Medium Dark		Dry (Circle I Olive Gray	major & unde Brown	erline mod Blac	· · · · · · · · · · · · · · · · · · ·	Other	e light tan
Major Constituent Fine Medium Coa	rse		major & under	erline mo	difying Clay		
Minor Constituent with trace Fine Medium Coa	rse	Gravel S	and §	sit	Clay		
Subsurface sediment characteristics:  Density / Consistency  Sand / Gravel - Very Loose Silt / Clay - Very Soft	Loose	Medium Medium		Dense Stiff		Very Dense	Hard
Moisture Very Wet Wet Mois	st Damp	Dry (Circle	major & und	erline mo	difvina	1	
Light Medium Dari	k	Olive Gray		) Blac		Other	
Major Constituent Fine Medium Cos	irse		major & und	erline mo Silt	difying Clay		
Minor Constituent with trace Fine Medium Cos		1000000		Silt	Clay	-	
Comments: 1/4 / / / / / / / / / / / / / / / / / /	Debris:		6 Oil She	en:	None	Trace (<5%)	)
trace light fan	311/ 01/3	NI WE	SD		815	Initials:	1022

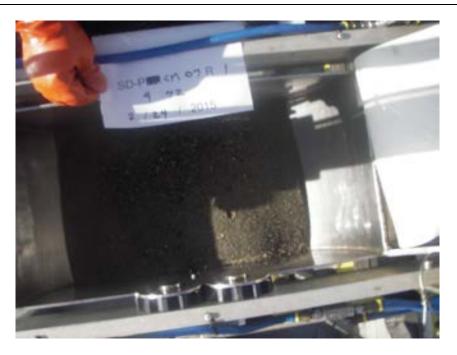


		QUAL	TATIVE SA	AMPLE C	HARA	CTERISTI	cs	- 3	Page of
	Coordinate	e Datum		Da (mm/d		Project Lo	ocation	Sample Identi Numbe	
WA State Plane, I	N Zone, NAD	83, Survey F	1	3 - 10	- 15	Boeing PL2	s	D-PCM_206	15
		Coordina	ates			Water 0	Depth	T	Time
	North			East		Depth	Unit Rep	Gear	
19674	+5		127 466	2		19.2	f t 1	0.2 Grab	1036
Penetration	e e			Sur	ficial Woo	od Estimate	:		
	Initials Soulde	S Weath	er (%)		ntact Poin				
	611	cloud	,			-	_	X 5 =	%
Surficial sedimen	nt characteri	stics:	8						
Biological: _	0	%	Debris:	0	_%	Oil Sheen:	None	Trace (<5%)	%
Moisture Very Wet	Wet	Moist	Damp	Dry					
Color Light	Medium	Dark				& underlin	e modifying Black	Other	
Major Constit	tuent Medium	Coarse		(Ci Gravel	rcle major Sand	* & underlin	e modifying Clay		
Minor Constit	tuent with tra Medium	Coarse	a .	Gravel	Sand	Silt	Clay		
Density / Con		Very Loose	Loose	> Me	dium Den	se D	ense	Very Dense	
Sil	t / Clay -	Very Soft	Soft	Me	dium Stiff	St	iff	Very Stiff	Hard
Moisture Very Wet	Wet	Moist	Damp	Dry					
Color Light	Medium	Dark		(Ci Olive	rcle majo Gray	r & underlin Brown	e modifying Black	Other	
Major Constitution	tuent	Coars	е	(Ci Gravel	Sand	silt	e modifying Cla		
Minor Consti	tuent with tra Medium	ace Coars	e	Gravel	Sand	Silt	Cla	y	
Biological: _	0	%	Debris:	0	_%	Oil Sheen:	None	) Trace (<5%	9
Comments:	101 ote	00v /00	ds 026						
						Amec	FW Proj. B	3P2 PCM	3
							CM20615	Initials: 6 5	n -
						- qsc			_ :
								/2015 Time:	1036 -
						Date:		72015 Time.	



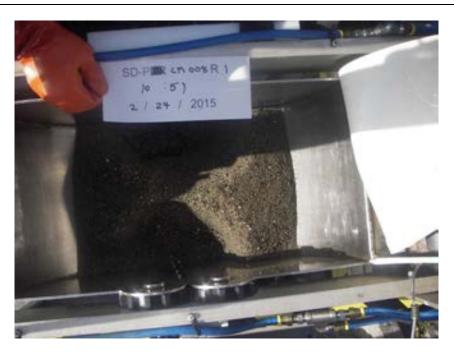
Station SD-PCM206 (Duplicate of Station SD-PCM006)

QUAL	ITATIVE SAMPLE CHA	RACTERISTICS	Page	of
Coordinate Datum	Date (mm/dd/y)	) Project Location	Sample Identificati Number	on
A State Plane, N Zone, NAD 83, Survey F	5-59-1	S Boeing PL2	SD-PCM 97	_15
Coordin	ates	Water Depth		Time
North	East		Rep Gear	Mark
196425	1275013	14.4-11	) 0.2 Grab	142
Penetration Depth Unit Initials S S Weat	ner 🖁 🕄 Contac	al Wood Estimate: t Points	X5 =	
Biological:%  Moisture		% Oil Sheen: 🚫	one Trace (<5%)	
Very Wet Wet Moist  Color Light Medium Dark	Damp Dry (Circle Olive Gra	major & underline mod y Brown Black		
Major Constituent Fine Medium Coars  Minor Constituent with trace Fine Medium Coars	e Gravel	major & underline mod Sand Silt	Clay	
Density / Consistency  Sand / Gravel - Very Loose	Loose Mediur	n Dense Dense	Very Dense	
Silt / Clay - Very Soft  Moisture	Soft Mediur	n Stiff Stiff	Very Stiff	Hard
Very Wet Wet Moist  Color Light Medium Dark  Major Constituent	Olive Gra	major & underline mod y Brown Black	Other	
Fine Medium Coars Minor Constituent with trace		8and Silt	Clay	
Fine Medium Coars	0	Sand Silt % Oil Sheen: N	Clay	
Comments: sill trace couse	gan brien & gray	AmecFW SD-PCM0 QSC Form	Section of the Contraction of th	_



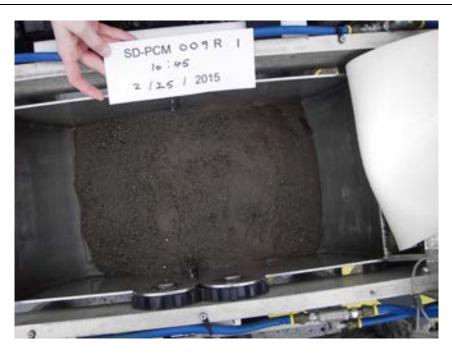
Station SD-PCM007

				Da	ate	T				Sample Iden	tification
	Coordina	te Datum		(mm/c	dd/yy)	Pr	oject Lo	cation	1	Numb	er
A State Plane, N	V Zone, NAI	83, Survey F	t	2- 24	-15	Boein	g PL2		St	D-PCM_OP	815
		Coordin	ates				Water D	epth			Time
	North	7.5	/	East		_	Depth	Unit	Rep	Gear	1000
1960	73		12754	01		1	2.8	f t	1	0.2 Grab	1051
Penetration	- e	_	92	Su	rficial W	ood Es	timate:				
Depth Unit	Initials s	V Weath	er Eines	Co	ntact Po	ints					
(2 c m	65M	Innay	3-1							X 5 =	
rficial sedimer	nt characte	ristics:									
Dielogicals	0	%	Debris:	0	%	Olle	heen:	No	(200	Trace (<5%	X.
Biological: _			Debris.			Oil 3	neen.	600	110	11000 (~5 %	<i>'</i>
Moisture Very Wet	(Wet	) Moist	Damp	Dry							
very wet	Wei	MOISE	Damp	Diy							
Color	Medium	Dark		(Ci Olive	ircle maj	Brow	_	modi Black		Other	
Light	Medium	Dark		Olive	Gray	BIOM		DIBUK		Other	
Major Constit				A DOCK THE RESERVE OF THE PERSON OF THE PERS	ircle maj			modi	-		
Fine	Medium	Coarse	9	Gravel	Sanc		Silt		Clay	-	
Minor Constit		1		12000	6	$\mathcal{C}$			-	4	han a
Minor Constit Fine bsurface sedin Density / Con	Medium ment chara	) Coarse	9	Gravel	Sang	2	Silt		Clay		bon Condina b
Fine bsurface sedin Density / Con Sand /	Medium ment chara sistency Gravel -	Coarse cteristics:  Very Loose	Loose	) Me	Sance	nse		ense	Clay	Very Dense	undler of
Fine bsurface sedir Density / Con Sand /	Medium ment chara isistency Gravel - t / Clay -	Coarse	Loose	) Me	edium De	nse	De		Clay	grace	sulliva b
Fine bsurface sedir Density / Con Sand /	Medium ment chara sistency Gravel -	Coarse cteristics:  Very Loose	Loose	) Me	edium De	nse	De		Clay	Very Dense	sulliva b
Fine bsurface sedir Density / Con Sand / Sill Moisture Very Wet	Medium ment chara sistency Gravel - t / Clay -	Coarse cteristics:  Very Loose  Very Soft	Loose	) Me Me Dry	edium De	nse ff	De Sti	ff		Very Dense Very Stiff	sulliva b
Fine bsurface sedir Density / Con Sand / Sill Moisture	Medium ment chara sistency Gravel - t / Clay -	Coarse cteristics:  Very Loose  Very Soft	Loose	) Me Me Dry	edium De edium Sti	nse ff	De Sti	ff	ifying	Very Dense Very Stiff	sulliva b
Fine bsurface sedin Density / Con Sand / Sill Moisture Very Wet Color Light	Medium ment chara sistency Gravel - t / Clay - Wet	Coarse cteristics:  Very Loose Very Soft  Moist	Loose	Dry (C	edium De edium Sti Gray	ff for & u Brow	De Sti nderline	e mod Black	ifying	Very Dense Very Stiff Other	sulliva b
Fine bsurface sedir Density / Con Sand / Sill Moisture Very Wet Color	Medium ment chara sistency Gravel - t / Clay - Wet	Coarse cteristics:  Very Loose Very Soft  Moist	Loose Soft Damp	Dry (C	edium De edium Sti	ior & u	De Sti nderline	e mod Black	ifying	Very Dense Very Stiff Other	sulliva b
Fine bsurface sedia Density / Con Sand / Sill  Moisture Very Wet  Color Light  Major Constit Fine	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse	Loose Soft Damp	Dry Olive (C	edium De edium Sti Circle ma Gray	ior & u	De Sti	e mod Black	ifying	Very Dense Very Stiff Other	sulliva b
Fine bsurface sedin Density / Con Sand / Sill Moisture Very Wet Color Light Major Constit	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse	Loose Soft Damp	Dry Olive (C	edium De edium Sti Circle ma Gray	or & u	De Sti	e mod Black	ifying	Very Dense Very Stiff Other	sulliva b
Fine bsurface sedia Density / Con Sand / Sill  Moisture Very Wet  Color Light  Major Constit Fine  Minor Constit	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse  race	Soft Damp	Dry (C Olive (C Gravel	edium De edium Sti Sircle maj Gray Sand	onse  ff  Brown  jor & u	Stinderline  nderline Silt	e mod Black e mod	ifying ifying Clay	Very Dense Very Stiff Other	endline b
Fine  bsurface sedir  Density / Con  Sand /  Sill  Moisture  Very Wet  Color  Light  Major Constit  Fine  Minor Constit  Fine  Biological:	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse  race	Soft Damp	Dry (C Olive (C Gravel	edium De edium Sti Sircle maj Gray Sand	onse  ff  Brown  jor & u	De Stinderline moderline Silt	e mod Black e mod	ifying Clay	Very Dense Very Stiff Other	endline b
Fine bsurface sedia Density / Con Sand / Sill  Moisture Very Wet  Color Light  Major Constit Fine  Minor Constit	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse  race	Soft Damp	Dry (C Olive (C Gravel	edium De edium Sti Sircle maj Gray Sand	or & u	De Stinderline moderline Silt	e mod Black e mod	ifying Clay Clay	Very Dense Very Stiff Other	endline 6
Fine  bsurface sedir  Density / Con  Sand /  Sill  Moisture  Very Wet  Color  Light  Major Constit  Fine  Minor Constit  Fine  Biological:	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse  race	Soft Damp	Dry (C Olive (C Gravel	edium De edium Sti Sircle maj Gray Sand	jor & u Oil S	nderline Silt Silt Sheen:	e mod Black e mod	Clay	Very Dense Very Stiff Other	endline 6
Fine  bsurface sedir  Density / Con  Sand /  Sill  Moisture  Very Wet  Color  Light  Major Constit  Fine  Minor Constit  Fine  Biological:	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse  race	Soft Damp	Dry (C Olive (C Gravel	edium De edium Sti Sircle maj Gray Sand	oil S	nderline Silt Silt Sheen:	e mod Black e mod	Clay	Very Dense Very Stiff  Other  Trace (<59	endline 6
Fine  bsurface sedir  Density / Con  Sand /  Sill  Moisture  Very Wet  Color  Light  Major Constit  Fine  Minor Constit  Fine  Biological:	Medium ment chara sistency Gravel - t / Clay - Wet Medium tuent Medium	Coarse  cteristics:  Very Loose  Very Soft  Moist  Dark  Coarse  race	Soft Damp	Dry (C Olive (C Gravel	edium De edium Sti Sircle ma Sand Sand	oil s Ame	nderline Silt Silt Sheen: cFW P	e mod Black e mod	ifying Clay Clay	Very Dense Very Stiff  Other  Trace (<59	endline 6



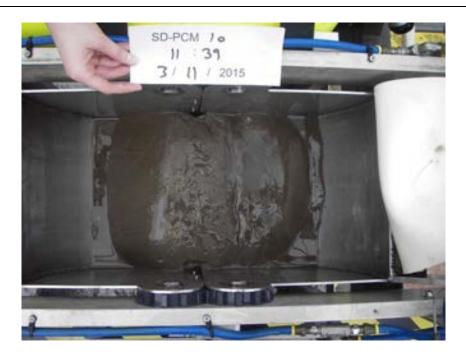
Station SD-PCM008

QUAL	ITATIVE SAMPLE	CHARAC	TERISTIC	S	Р	age of
Coordinate Datum	(m	Date m/dd/yy)	Project Loc	ation	Sample Identif Number	
A State Plane, N Zone, NAD 83, Survey F	2-2	25-15	Boeing PL2	s	D-PCM 009	15
Coordin	ates		Water De	epth		Time
North	East		Depth	Unit Rep	Gear	CONTRACT.
195745	1275768		11.0	f t \	0.2 Grab	1045
Penetration  Depth Unit Initials    Weath	ner E %	Surficial Woo Contact Poin			X 5 =	
Biological: 2 (1 leaf) %	Debris:	%	Oil Sheen:	None	Trace (<5%)	
Moisture Very Wet Wet Moist	Damp Dry	,				
Color Light Medium Dark	Olive	(Circle major Gray		modifying) Black	Other	
Major Constituent Fine Medium Coars		(Circle major Sand	& underline Silt	modifying Clay		
Minor Constituent with trace Fine Medium Coars	e Grave	Sand	Silt	Clay		
Sand / Gravel - Very Loose	Loose	Medium Dens		nse	Very Dense	Uesd
Silt / Clay - Very Soft	Soft	Medium Stiff	Stif		Very Stiff	Hard
Very Wet Wet Moist	Damp Dr					
Color Light Medium Dark	Olive	(Circle major Gray	r & underline Brown	modifying Black	Other	
Major Constituent Fine Medium Coars	e Grave		silt Silt	modifying Clay		
Minor Constituent with trace Fine Medium Coars	e Grave	Sand	Silt	Clay		
Biological:%	Debris:	%	Oil Sheen:	None	Trace (<5%)	<u> </u>
O.S. cm layer of s	:/+				- 17 Marine 1997 (17 11 11 11 11 11 11 11 11 11 11 11 11 1	
					P2 PCM Initials:	72
					/2015 Time:_	0 42



Station SD-PCM009

	QUALITATIVE S	SAMPLE CHARA	CTERISTICS	Pa	ge of
Coordinate D	atum	Date (mm/dd/yy)	Project Location	Sample Identific Number	ation
VA State Plane, N Zone, NAD 83,	Survey Ft	3-11-15	Boeing PL2	SD-PCM_O\O	15
	Coordinates		Water Depth		Time
19 53 North	Coordinates	East	Depth Unit R	ep Gear	riine
1987 54	1277	3238	18.0 1 1	0.2 Grab	1139
				10.2 0.00	
Penetration  Depth Unit Initials SO >	Weather E &	Surficial Wo	ood Estimate: ints	_ X5 = _	9
surficial sediment characteristic	cs:	%	Oil Sheen: None	) Trace (<5%)	9
Moisture Very Wet Wet	Moist Damp	Dry			
Color Light Medium	Dark	Olive Circle majo	or & underline modifyi Brown Black	ng) Other	
Major Constituent Fine Medium	Coarse	(Circle majo Gravel Sand	or & undertine modifyi	ng) lay	
Minor Constituent with trace Fine Medium	Coarse	Gravel Sand	Silt C	lay	
bubsurface sediment charactering Density / Consistency		1		TOPOTA STORY	
2000	y Loose Loose y Soft Soft	Medium Der		Very Dense	Hard
Silt / Clay - Ver Moisture Very Wet Wet	y Soft Soft  Moist Damp		i Suii	Very Stiff	naiu
Color Light Medium	Dark	1 000 THE STREET	or & underline modifyi	other	
Major Constituent Fine Medium	Coarse	(Circle ma) Gravel Sand	or & underline modifyi Silt C	ing) lay	
Minor Constituent with trace Fine Medium	Coarse	Gravel Sand	Sit C	lay	
Biological:	% Debris:	0%	Oil Sheen: None	Trace (<5%)	
Comments: layer of	silt on t	of of grab			
			AmecFW Proj. BF SD-PCM01015 QSC Form Date: 3 /\_/	Initials:65 (\)	<u> </u>



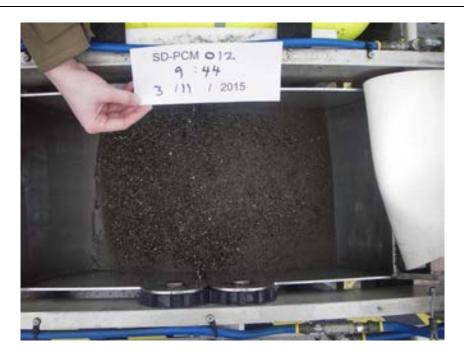
Station SD-PCM010

		QUA	LITATIVE S	AMPLE	HARAC	IEKISII	CS		F	Page of
	Coordina	ate Datum		Da (mm/c	0.000	Project Lo	ocation		Sample Identi Numbe	
/A State Plane	e, N Zone, NA	D 83, Survey	Ft	3-10.	-15 B	oeing PL2		st	D-PCM_ O//	15
		Coordi	nates			Water 0	Depth			Time
	North		12 29 5	East		Depth	Unit	Rep	Gear	151708500
1981	89		12729			10.7	ft	1	0.2 Grab	1341
Penetration	1 2	П		10000	rficial Woo	d Estimate	8			
Depth Unit	Initials S	V Wea	ther E %	3533	ntact Point		•			
20 cm		10 c/20		Co	mace Form	8			X5 =	
urficial sedin Biological: Moisture	ent characte	cristics: CCrustacean %	Debris: <	(tu		il Sheen:	No	ne	Trace (<5%)	
Very We	t Wes	Moist	Damp	Dry						
Color					rcle major			ying)		
Light	Medium	) Dark		Olive	Gray B	frown	Black		Other	
Major Cons					rcle major			A		
Fine	Medium	Coan	se	Gravel	Sand	Silt		Clay	-	
Minor Cons	Medium	trace Coan	5e	Gravel	Sand	Sift	0	Clay		
	diment chara	ecteristics:								
Density / C	onsistency			5						
Sand	d / Gravel -	Very Loose	Loose	Me	dium Dense	e De	ense		Very Dense	
1	Silt / Clay -	Very Soft	Soft	Me	dium Stiff	St	iff		Very Stiff	Hard
Moisture Very We	t Wet	7 Mois	t Damp	Dry						
Color Light	Medium	Dark		Olive (Ci	rcle major Gray E	& underlin	e modit Black	fying)	Other	
Major Cons Fine	Medium	) Coar	se	(C Gravel	ircle major Sand	& underlin	e modif	fying) Clay		
Minor Cons	stituent with Medium	trace Coar	se	Gravel	Sand	Silt		Clay		
Biological:	0	%	Debris:	0	% (	Oil Sheen:	No	90	Trace (<5%)	
Comments	:									
					s	necFW Pr D-PCM01 asc Form pate: 3	115	Initia	M ls: <u>6599</u> 5 Time: <u>134</u>	



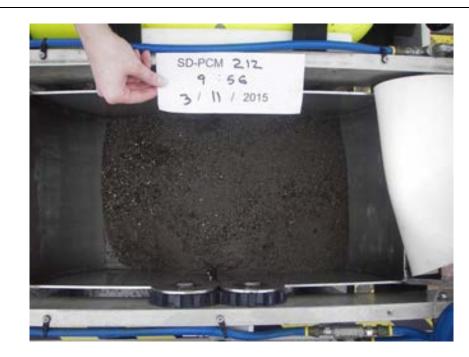
Station SD-PCM011

				ACTERISTI	-		age of _
Coordinate	Datum		Date (mm/dd/yy)	Project Lo	ocation	Sample Identif Number	
A State Plane, N Zone, NAD 8	3, Survey Ft		3-11-15	Boeing PL2	st	D-PCM_012	15
	Coordinates			Water I	Depth		Time
North		E	ast	Depth	Unit Rep	Gear	
197900		27330	8	17.0	ft	0.2 Grab	944
Penetration 8		92	Surficial W	ood Estimate	:		
Penetration Depth Unit Initials	Weather	Fines (%)	Contact Po	ints			
15 cm 654	dondy			-	_	X5 = .	
urficial sediment characterist	tics:						
Biological:	% Debris	s: C	%	Oil Sheen:	None	Trace (<5%)	
Moisture	152						
Very Wet Wet	Moist	Damp	Dry				
Color			(Circle maj	or & underlin	e modifying)		
Light Medium	Dark	0	live Gray	Brown	Black	Other	
Major Constituent			(Circle maj	or & underlin	e modifying)	i	
Fine Medium	Coarse	G	ravel Sand	sin	Clay	ALT THE !	
Minor Constituent with trac		12					
Fine Medium	Coarse	G	ravel Sand	silt )	Clay	-	
Density / Consistency							
Sand / Gravel - V	ery Loose	Loose	Medium De		ense	Very Dense	200
Sand / Gravel - V	ery Loose ery Soft	Loose	Medium De		ense	Very Dense Very Stiff	Hard
Sand / Gravel - V	ery Soft	Soft	Medium Sti				Hard
Sand / Gravel - Volume - Volum			Medium Sti	iff Si	aff	Very Stiff	Hard
Sand / Gravel - V	ery Soft	Soft	Medium Sti		aff	Very Stiff	Hard
Sand / Gravel - Vo	Moist  Dark	Soft Damp	Medium Sti  Dry  (Circle maj  live Gray  (Circle maj	or & underlin	e modifying Black e modifying	Very Stiff Other	Hard
Sand / Gravel - Volume	ery Soft Moist	Soft Damp	Medium Sti Dry (Circle maj live Gray	or & underlin	e modifying Black	Very Stiff Other	Hard
Sand / Gravel - Vo	Moist  Dark  Coarse	Soft Damp G	Medium Sti  Dry  (Circle maj  live Gray  (Circle maj	or & underling Brown	e modifying Black e modifying	Very Stiff Other	Hard
Sand / Gravel - Volume   Silt / Clay - Volume   Wet   Color	Moist Dark Coarse	Soft Damp G	Medium Sti  Dry  (Circle ma) five Gray  (Circle ma) fravel Sand	or & underling Brown	e modifying Black e modifying Clay	Very Stiff Other	Hard
Sand / Gravel - Volume   Silt / Clay - Volume   Moisture	Moist  Dark  Coarse  Coarse  Debri	Soft  Damp  G  G  S:	Medium Sti  Dry  (Circle maj  (Circle maj  iravel Sand	or & underling Brown Jor & underling Silt	e modifying Black e modifying Clay	Very Stiff Other	
Sand / Gravel - Volume   Silt / Clay - Volume   Wet   Color   Light   Medium   Major Constituent   Fine   Medium   Minor Constituent with trace   Fine   Medium   Biological:	Moist  Dark  Coarse  Coarse  Debri	Soft  Damp  G  G  S:	Medium Sti  Dry  (Circle maj live Gray  (Circle maj liravel Sand  Sand  Amed	or & underling Brown Silt Silt Oil Sheen:	e modifying Black e modifying Clay None	Other	
Sand / Gravel - Volume   Silt / Clay - Volume   Wet   Color	Moist  Dark  Coarse  Coarse  Debri	Soft  Damp  G  G  S:	Medium Sti  Dry  (Circle maj live Gray  (Circle maj liravel Sand  Sand  Amed	or & underling Brown  or & underling Silt  oil Sheen: FW Proj. BP	e modifying Black e modifying Clay None	Other	
Sand / Gravel - Volume   Silt / Clay - Volume   Wet   Color	Moist  Dark  Coarse  Coarse  Debri	Soft  Damp  G  G  S:	Medium Sti  Dry  (Circle majoravel Sand  iravel Sand  Amec  SD-PC  QSC F	or & underling Brown  for & underling Silt  oil Sheen: FW Proj. BP	e modifying Black e modifying Clay Clay None 2 PCM nitials: 651	Other	Hard
Sand / Gravel - Volume   Silt / Clay - Volume   Wet   Color	Moist  Dark  Coarse  Coarse  Debri	Soft  Damp  G  G  S:	Medium Sti  Dry  (Circle majoravel Sand  iravel Sand  Amec  SD-PC  QSC F	or & underling Brown  or & underling Silt  oil Sheen: FW Proj. BP	e modifying Black e modifying Clay Clay None 2 PCM nitials: 651	Other	



Station SD-PCM012

			AIIII EE (		TERISTI			,	age of	
Coordinate D	atum		Da (mm/c	ate dd/yy)	Project Lo	cation		Sample Identif Number		
/A State Plane, N Zone, NAD 83,	Survey Ft		3-11	- 15				SD-PCM_2 1215		
	Coordinate	s			Water D	Depth			Time	
North			East		Depth	Unit	Rep	Gear	0.00000	
197 900		15733	12		16.7	f t	1	0.2 Grab	956	
Penetration 9		92	Su	rficial Woo	od Estimate:	8				
Penetration  Depth Unit Initials V	Weather	Fines (%)	Co	ntact Poin	ts					
7 cm <34	eloudy				-		- 27	X 5 =		
urficial sediment characteristic	cs:									
Biological:	% De	bris:	0	%	Oil Sheen:	No	ne	Trace (<5%)		
Moisture							1			
Very Wet Wet	Moist	Damp	Dry							
Color			(CI	ircle major	& underline	modi	fying)			
Light Medium	Dark		Olive		Brown	Black	,	Other		
Major Constituent			(Ci	ircle major	& underline	e modi	fying)			
Fine Medium	Coarse		Gravel	Sand	) Silt		Clay			
Minor Constituent with trace Fine Medium	Coarse		Gravel	Sand	Silt		Clay			
ubsurface sediment characteri	istics:									
Density / Consistency										
Density / Consistency			C			12000				
	y Loose	Loose	) Me	edium Dens	se De	ense		Very Dense		
Sand / Gravel - Ver	y Loose y Soft	Loose		edium Dens	se De	111111		Very Dense Very Stiff	Hard	
Sand / Gravel - Ver						111111			Hard	
Sand / Gravel - Ver  Silt / Clay - Ver  Molsture  Very Wet Wet  Color	y Soft	Soft	Me Dry	edium Stiff	St r & undertin	iff	fying)	Very Stiff	Hard	
Sand / Gravel - Ver Silt / Clay - Ver Molsture Very Wet Wet	y Soft	Soft	Me Dry	edium Stiff ircle major	St	iff	fying)	Very Stiff	Hard	
Sand / Gravel - Ver  Silt / Clay - Ver  Molsture Very Wet  Color Light Medium  Major Constituent	y Soft Moist Dark	Soft	Dry (C Olive	ircle major Gray	r & underline Brown	e modi Black	fying)	Very Stiff Other	Hard	
Sand / Gravel - Ver  Silt / Clay - Ver  Molsture Very Wet  Color Light Medium	y Soft Moist	Soft	Dry (C Olive	ircle major Gray	st r & undertine Brown	e modi Black		Very Stiff Other	Hard	
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent	y Soft  Moist  Dark  Coarse	Soft	Dry (C Olive	ircle major Gray	r & underline Brown	e modi Black	fying)	Very Stiff Other	Hard	
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	y Soft  Moist  Dark  Coarse  Coarse	Soft	Dry (C Olive (C Gravel	ircle major Gray ircle major Sand	sunderling Brown & underling Silt	e modi Black e modi	fying) Clay	Very Stiff Other	Hard	
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:  Comments:	y Soft  Moist  Dark  Coarse  Coarse  Moist	Soft Damp	Dry (C Olive (C Gravel	ircle major Gray ircle major Sand Sand	r & underline Brown  r & underline Silt Silt Oil Sheen:	e modi Black e modi	fying) Clay Clay	Very Stiff Other		
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	y Soft  Moist  Dark  Coarse  Coarse	Soft Damp	Dry (C Olive (C Gravel	ircle major Gray ircle major Sand Sand	r & underline Brown  r & underline Silt Silt Oil Sheen:	e modi Black e modi	fying) Clay Clay	Very Stiff Other Trace (<5%)		
Sand / Gravel - Ver  Silt / Clay - Ver  Molsture Very Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:  Comments:	y Soft  Moist  Dark  Coarse  Coarse  Moist	Soft Damp	Dry (C Olive (C Gravel	ircle major Gray ircle major Sand Sand	sit Silt Oil Sheen:	e modi Black e modi	Clay Clay	Other		
Sand / Gravel - Ver  Silt / Clay - Ver  Molsture Very Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	y Soft  Moist  Dark  Coarse  Coarse  Moist	Soft Damp	Dry (C Olive (C Gravel	ircle major Gray ircle major Sand Sand	sit Silt Oil Sheen:	e modi Black e modi	Clay Clay	Other		
Sand / Gravel - Ver  Silt / Clay - Ver  Molsture Very Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	y Soft  Moist  Dark  Coarse  Coarse  Moist	Soft Damp	Dry (C Olive (C Gravel	ircle major Gray ircle major Sand Sand	sit Silt Oil Sheen:	e modi Black e modi	Clay Clay BP2	Other Trace (<5%) PCM		



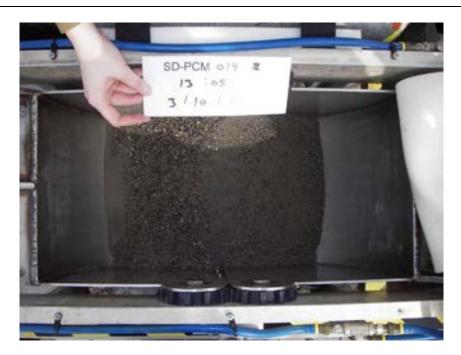
Station SD-PCM212 (Duplicate of Station SD-PCM012)

QUALITATIV	E SAMPLE CHARA	ACTERISTICS	1	Page of
Coordinate Datum	Date (mm/dd/yy)	Project Location	Sample Identi Numbe	
WA State Plane, N Zone, NAD 83, Survey Ft	3-19-15	Boeing PL2	SD-PCM 9 12	15
Coordinates		Water Depth		Time
North	East	Depth Unit Re	p Gear	2335255
197610 127	3628	9.6 ft 1	0.2 Grab	1412
Penetration 8	Surficial W	ood Estimate:		
Penetration  Depth Unit Initials 0 Weather is	Surficial W			
15 cm 65 0 8 clands	Contact Fo		X5 =	%
Surficial sediment characteristics:				
0	0.		L	
Biological:% Debris:	%	Oil Sheen: None	/ Trace (<5%)	%
Moisture				
Very Wet Wet Moist D	amp Dry			
Color	(Circle maj	or & underline modifyin	g)	
Light Medium Dark	Olive Gray	Brown Black	Other	
Major Constituent	(Circle ma)	or & underline modifyin	eg)	
Fine Medium Coarse	Gravel Sand	CONTRACTOR OF THE PROPERTY OF		
Minor Constituent with trace				
Fine Medium Coarse	Gravel Sand	1) Silt Cla	ту	
Sand / Gravel - Very Loose	oose Medium De	nse Dense	Very Dense	
Silt / Clay - Very Soft S	oft Medium Sti	ff Stiff	Very Stiff	Hard
Moisture				
Very Wet Wet Moist	Damp Dry			
Color	(Circle ma	or & underline modifyir	ng)	
Light Medium Dark	Olive Gray	Brown Black	Other	
Major Constituent	(Circle ma	or & underline modifyir	ng)	
Fine Medium Coarse	Gravel San	Silt Cli	ву	
Minor Constituent with trace				
Fine Medium Coarse	Gravel San	d Silt Cli	ау	
Biological:% Debris:	%	Oil Sheen: None	)	
Comments:	T T-			
1403 attempt 1 reject -	foor bougation			
The state of the s		AmecFW Proj.	BP2 PCM	
		SD-PCM01315	Initials: 65	0
		QSC Form	1000	
		Date:		
		Date:	/2015 T	fu i-

AmniField Forms/QSC



	QUALITATIVE	SAMPLE CHA	MACI	ERISTI	CS			Page of _	
Coordinate Da	tum	Date (mm/dd/yy	)	Project Lo	cation		Sample Iden Numb		
/A State Plane, N Zone, NAD 83,	Survey Ft	3-10-12	3-10-15 Boe			St	D-PCM_01415		
	Coordinates			Water D	Depth			Time	
North		East		Depth	Unit	Rep	Gear	77,775	
197325	127	3948				1	0.2 Grab	1302	
Penetration 8	I 100	Surficia	Nood le	Estimate:					
Penetration Depth Unit Initials SO	Weather LE	Contac	t Points	Loumate.					
13 c m 43%	6/20/11	i contac	Cronits	8 9 <u></u>			X5 =		
urficial sediment characteristic									
urnicial sediment characteristics						5			
Biological:	_% Debris: _		6 Oil	Sheen:	(No	ne)	Trace (<5%	)	
Moisture									
Very Wet (Wet)	Moist Dan	np Dry							
Color		(Circle	major.&	underline	e modi	fying)			
Light Medium	Dark	Olive Gray		own)	Black		Other		
Major Constituent		(Circle	major &	underline	modi	fvina)			
(Fine) Medium	Coarse	000000000000000000000000000000000000000	Sand)	Silt		Clay			
		_	~						
Minor Constituent with trace									
Minor Constituent with trace Fine Medium  ubsurface sediment characteris  Density / Consistency	Coarse	Gravel	Sand	Silt		Clay	3		
Fine Medium  ubsurface sediment characteris  Density / Consistency		7)	Sand Dense		ense	Clay	Very Dense		
Fine Medium  ubsurface sediment characteris  Density / Consistency	Loose Loo	se Mediun	n Dense			Clay	Very Dense	Hard	
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very	Loose Loo	se Mediun Mediun	n Dense	De		Clay	.0000000000		
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture	Loose Loo Soft Soft	se Medium Medium	n Dense	De	iff	fying)	Very Stiff		
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color	Loose Loo Soft Soft Moist Dan	Medium  Medium  Dry  (Circle Olive Gra	n Dense n Stiff major &	De St	iff e modi Black	fying)	Very Stiff Other		
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium	Loose Loo Soft Soft Moist Dan	se Medium  Medium  np Dry  (Circle Olive Gra	n Dense n Stiff major &	Sti	iff e modi Black	fying)	Very Stiff Other		
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent	Loose Loos Soft Soft Moist Dan	se Medium  Medium  np Dry  (Circle Olive Gra	Dense Stiff major &	underline own	iff e modi Black	fying)	Very Stiff Other		
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium	Loose Loos Soft Soft Moist Dan	mp Dry (Circle Olive Gra (Circle Gravel	Dense Stiff major &	underline own	iff e modi Black	fying)	Very Stiff Other		
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	Loose Loo Soft Soft Moist Dan Dark Coarse	mp Dry (Circle Olive Gra (Circle Gravel	major & Sand	underline own underline Silt Silt	e modi Black e modi	fying) fying) Clay	Very Stiff Other	Hard	
Fine Medium  Ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loose Soft Soft Moist Dan Dark Coarse Coarse % Debris:	se Medium  Medium  np Dry  (Circle Olive Gra  (Circle Gravel	major & Sand	underline own underline Silt Silt	e modi Black e modi	fying) fying) Clay	Very Stiff Other	Hard	
Fine Medium  ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wel Wel  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loose Soft Soft Moist Dan Dark Coarse Coarse % Debris:	se Medium  Medium  np Dry  (Circle Olive Gra  (Circle Gravel	major & Sand Sand Sand	underline own underline Silt Silt	e modi Black e modi	fying) Clay Clay	Other	Hard	
Fine Medium  Ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loose Soft Soft Moist Dan Dark Coarse Coarse % Debris:	se Medium  Medium  np Dry  (Circle Olive Gra  (Circle Gravel	major & Sand Sand An	underline own silt silt silt	e modi Black e modi	fying) Clay Clay	Other	Hard	
Fine Medium  Ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loose Soft Soft Moist Dan Dark Coarse Coarse % Debris:	se Medium  Medium  np Dry  (Circle Olive Gra  (Circle Gravel	major & Sand  Sand  Arr  SD	underline own silt silt silt silt silt	e modi Black e modi	fying) Clay Clay	Other	Hard	
Fine Medium  Ubsurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loose Soft Soft Moist Dan Dark Coarse Coarse % Debris:	se Medium  Medium  np Dry  (Circle Olive Gra  (Circle Gravel	major & Sand Sand Sand Sand QS	underline own silt silt silt silt Silt Silt C Form	e modi Black e modi roj. Bl	fying) Clay Clay P2 P( Initia	Other	Hard	



Station SD-PCM014

	5897	Date			Sample Identif	
Coordinate Da		(mm/dd/yy)	Project L	ocation	Number	7000
A State Plane, N Zone, NAD 83,	Survey Ft	3-11-15	Boeing PL2		SD-PCM 015	15
	Coordinates		Water	Depth		Time
North		East	Depth	Unit R	ep Gear	7.1747811
197 031	1274	273	16,4	ft	0.2 Grab	849
Penetration 9	10	Surficial	Wood Estimate			
Penetration Depth Unit Initials S	Weather S	Contact		0.0		
	Vain	1			X5 =	
rficial sediment characteristic	8.					
Ω		- 3			3	
Biological:	_% Debris: _	%	Oil Sheen:	None	Trace (<5%)	
Moisture						
Very Wet Wet	Moist Dami	p Dry				
Color		(Circle m	najor & underlin	e modify		
Light Medium	Dark	Olive Gray	Brown	Black	Other	
Major Constituent		(Circle m	najor & underlin	e modify	ing)	
Fine Medium	Coarse		and Silt		lay	+.
Minor Constituent with trace						
Fine Medium  bsurface sediment characteris  Density / Consistency	Coarse stics:	Gravel Sa	and Silt		Zlay	
Fine Medium  bsurface sediment characteris  Density / Consistency  Sand / Gravel - Ven	stics: / Loose Loos	e Medium	Dense D	ense	Very Dense	
Fine Medium  bsurface sediment characteris  Density / Consistency  Sand / Gravel - Ven	stics:		Dense D	T-00100.0		Hard
Fine Medium  Ibsurface sediment characteris  Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven  Moisture	stics: y Loose Loos y Soft Soft	Medium Medium	Dense D	ense	Very Dense	Hard
Fine Medium  bsurface sediment characteris  Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven	stics: / Loose Loos	Medium Medium	Dense D	ense	Very Dense	Hard
Fine Medium  absurface sediment characteris  Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven  Moisture Very Wet Wet  Color	stics:  / Loose Loos / Soft Soft  Moist Dam	Medium  Medium  Dry  (Circle n	Dense D Stiff S najor & underlin	ense tiff	Very Dense Very Stiff	Hard
Fine Medium  absurface sediment characteris  Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven  Moisture  Very Wet Wet	stics: y Loose Loos y Soft Soft	Medium Medium	Dense D Stiff S najor & underlin	ense	Very Dense Very Stiff	Hard
Fine Medium  bsurface sediment characteris  Density / Consistency  Sand / Gravel - Ven  Silt / Clay - Ven  Moisture Very Wet Wet  Color Light Medium  Major Constituent	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark	e Medium  Medium  Dry  Circle n  Olive Gray	Dense D Stiff S najor & underlin Brown	ense tiff ne modify Black ne modify	Very Dense Very Stiff  ing) Other	Hard
Fine Medium  Absurface sediment characteris  Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium	stics:  / Loose Loos / Soft Soft  Moist Dam	e Medium  Medium  Dry  Circle n  Olive Gray	Dense D Stiff S najor & underlin	ense tiff ne modify Black ne modify	Very Dense Very Stiff  ing) Other	Hard
Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark  Coarse	Medium  Medium  Dry  (Circle n Olive Gray  (Circle n Gravel Sa	Dense D Stiff S najor & underlin Brown najor & underlin and Silt	ense tiff ne modify Black ne modify	Very Dense Very Stiff  ing) Other  ing)	Hard
Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark	Medium  Medium  Dry  (Circle n Olive Gray  (Circle n Gravel Sa	Dense D Stiff S najor & underlin Brown	ense tiff ne modify Black ne modify	Very Dense Very Stiff  ing) Other	Hard
Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark  Coarse	Medium  Medium  Dry  (Circle n Olive Gray  (Circle n Gravel Sa	Dense D Stiff S najor & underline Brown najor & underline and Silt	ense tiff ne modify Black ne modify	Very Dense Very Stiff  ing) Other lay	Hard
Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark  Coarse  Coarse	Medium  Medium  Dry  (Circle n Olive Gray  (Circle n Gravel Sa	Dense D Stiff S najor & underline Brown najor & underline and Silt	tiff ne modify Black ne modify	Very Dense Very Stiff  ing) Other Clay	Hard
Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark  Coarse  Coarse	Medium  Medium  Dry  (Circle n Olive Gray  (Circle n Gravel Sa	Dense D Stiff S najor & underline Brown najor & underline and Silt Oil Sheen:	ense tiff ne modify Black ne modify (	Very Dense Very Stiff  ing) Other Clay	
Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark  Coarse  Coarse	Medium  Medium  Dry  (Circle n Olive Gray  (Circle n Gravel Sa	Dense D Stiff S najor & underline Brown najor & underline and Silt Oil Sheen:	tiff ne modify Black ne modify (  Non	Very Dense Very Stiff  ing) Other ing) Clay Clay Proj. BP2 PCN	1
Density / Consistency  Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	stics:  / Loose Loos / Soft Soft  Moist Dam  Dark  Coarse  Coarse	Medium  Medium  Dry  (Circle n Olive Gray  (Circle n Gravel Sa	Dense D Stiff S najor & underline Brown najor & underline and Silt Oil Sheen:	tiff ne modify Black ne modify (  Non	Very Dense Very Stiff  ing) Other ing) Clay Clay Proj. BP2 PCN 101515 Initials:	

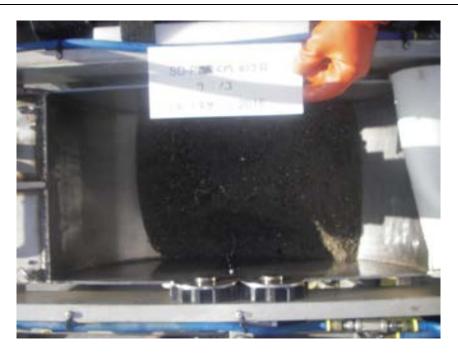


			QUAL	ITATIVE S	AMPLE	CHARA	CTERIS	TICS		P	age of	
	Coordi	nate D	atum		200.200	ate /dd/yy)	Project	Location		Sample Identifi Number		
VA State Plane,	N Zone, N	AD 83	, Survey F	i .	3-10	1-15	Boeing PL2	2	SI	SD-PCM_01615		
			Coordin	ates			Water	Depth		T	Time	
	North				East		Depth	T	Rep	Gear		
19670	١.			12746			16.9		1	0.2 Grab	1003	
Penetration	1	e I I		100	s	urficial Wo	od Estimat	lo:				
Depth Unit	Initials 6	VOA	Weat	Fines (%)		ontact Poir						
0 cm	637	-	6/-14	2 = = =		ontact r on				X5 =	*	
urficial sedime	ent charact	eristic	rs:	-1								
				2000	-	22			7		102	
Biological:	_0		%	Debris:	0	%	Oil Sheen:	No.	one)	Trace (<5%)	9	
Moisture		3	4.000		2							
Very Wet	Wet	/	Moist	Damp	Dry							
Color							r & underli		7 72			
Light	Medium	)	Dark		Olive	Gray	Brown	Black		Other		
Major Const		5			(0	ircle majo	r & underli	ne mod	fying)			
Fine	Mediun	1)	Coars	е	Gravel	Sand	) Sitt		Clay			
Minor Const	ituent with	trace	ř.			-						
Fine	Mediun	1	Coars	e	Gravel	Sand	Sitt		Clay	3		
3:00000	/ Gravel -		y Loose	Loose		ledium Den		Dense		Very Dense	0.000000	
8	ilt / Clay -	Ver	y Soft	Soft	M	ledium Stiff		Stiff		Very Stiff	Hard	
Moisture Very Wet	We	2	Moist	Damp	Dry							
Color		)					r & underli					
Light	Mediun	1	Dark		Olive	Gray	Brown	Black		Other		
Major Const		5		27	11 -40 Year 10 10 10 10 10 10 10 10 10 10 10 10 10		r & underli	ine mod				
Fine	Mediun	1	Coars	е	Gravel	Sand	Silt		Clay	-		
Minor Const		_		3		-	)					
Fine	Mediun	n	Coars	9)	Gravel	Sand	Silt		Clay	_		
Biological:	_0		%	Debris:	0	%	Oil Sheen	: N	enc	Trace (<5%)	9	
Comments:												
							AmecFW	/ Proj. E	3P2 P	СМ		
								52		als: 65 V		
							QSC For				3	
									Inna	ETime: 100	3 =	
							Date:		/2019	5 Time: 100		



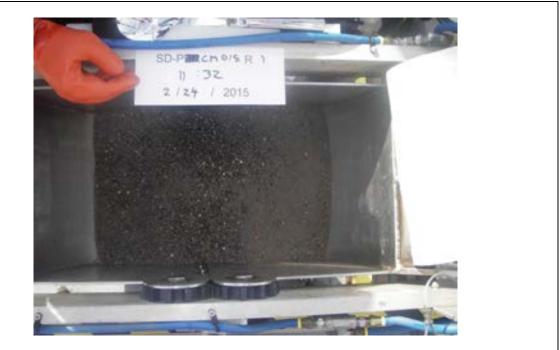
Station SD-PCM016

QUAL	ITATIVE SAM	IPLE CHAR	ACTERIST	ICS		P	age of
Coordinate Datum		Date (mm/dd/yy)	Project	Location		Sample Identif Number	
NA State Plane, N Zone, NAD 83, Survey F	ì	2-24-15	Boeing PL2	Boeing PL2 SD-P			15
Coordin	ates		Water	Depth			Time
North		East	Depth	Unit	Rep	Gear	967/855
196454	127491	5	21.3	ft		0.2 Grab	913
Penetration  Depth Unit Initials So Weath  \\ c m 6 \rightarrow  Surficial sediment characteristics:	Fines (%)	Surficial V Contact P	Vood Estimat oints –	e:		X5 =	
Biological:%	Debris:	%	Oil Sheen:	(No	one	Trace (<5%)	9
Very Wet Wes Moist  Color Light Medium Dark	Damp	Dry (Circle ma Olive Gray	njor & underli Brown	ne mod Black		Other	
Major Constituent Fine Medium Coars	e (	(Circle ma Gravel Sar	njor & underli	ne mod	ifying) Clay		
Minor Constituent with trace Fine Medium Coars Subsurface sediment characteristics:	e	Gravel Sar	a sin		Clay		
Sand / Gravel - Very Loose Silt / Clay - Very Soft  Moisture Very Wet Wet Moist	Loose Soft Damp	Medium D Medium S		Dense Stiff		Very Dense Very Stiff	Hard
Color Light Medium Dark		100000	ajor & underli Brown	ne mod Black		Other	
Major Constituent Fine Medium Coars Minor Constituent with trace Fine Medium Coars		Gravel Sar		ne mod	Clay Clay		
Biological:%	Debris:	%	Oil Sheen	: N	one	Trace (<5%)	



Station SD-PCM017

		Date			Samo	le Identifi	cation
Coordinate Datum	n	(mm/dd/yy)	Project Lo	cation	Camp	Number	outron.
A State Plane, N Zone, NAD 83, Sur	rvey Ft	2-24-15	Boeing PL2		SD-PCM	018	15
Co	oordinates		Water D	epth			Time
North		East	Depth	Unit		ear	
196164	12752	32	17,4	ft	1 0.2 G	irab	1132
Penetration Penetr	8	Surficial	Wood Estimate:				
	Weather (E &	Contact F	Points		ve	820	
13 cm 61m sw	-ny		_		_ X5		
rficial sediment characteristics:							
Biological: 0 9	% Debris:	0 %	Oil Sheen:	Nor	e Trace	e (<5%)	
Moisture							
Very Wet Wet N	Moist Damp	Dry					
Color			ajor-&-underline	modif			
Light Medium [	Dark	Olive Gray	Brown	Black	Othe		
Major Constituent			ajor & underline		-		
Fine Medium (	Coarse	Gravel Sa	nd- Silt		Clay _		
Minor Constituent with trace		=	<b>7</b>				ionn s
Fine Medium (	Coarse	Gravel Sa	nd Silt		Clay 7	rice c	irona 3
bsurface sediment characteristic  Density / Consistency	:8:						
Density / Consistency Sand / Gravel - Very Lo	oose Loose	Medium (		anse		Dense	- 11
Density / Consistency	oose Loose	Medium I			Very		Hard
Density / Consistency  Sand / Gravel - Very Lo  Silt / Clay - Very So  Moisture	oose Loose						Hard
Sand / Gravel - Very Lo Silt / Clay - Very So Moisture Very Wet Wet !	oose Loose oft Soft	Medium 8		ff	Very	Stiff	Hard
Sand / Gravel - Very Lo Silt / Clay - Very So  Moisture Very Wet  Color Light  Major Constituent	oose Loose oft Soft Moist Damp	Dry (Circle modive Gray	ajor & underlin Brown	iff e modif Black	Very lying) Othe	Stiff	Hard
Sand / Gravel - Very Lo  Silt / Clay - Very So  Moisture Very Wet Wet I  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	oose Loose oft Soft  Moist Damp  Dark	Dry (Circle m Olive Gray (Circle m Gravel Sa	ajor & underlin Brown	iff e modif Black	Very 'ying) Othe 'ying)	Stiff	Hard
Sand / Gravel - Very Lo  Silt / Clay - Very So  Moisture Very Wet Wet !  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	oose Loose oft Soft  Moist Damp  Dark  Coarse	Dry  (Circle m Olive Gray  (Circle m Gravel Sa Gravel Sa	stiff Stagor & underling Brown Silt Oil Sheen:	e modifi Black e modifi	Very (ying) Clay Clay De Trac	Stiff	Hard
Sand / Gravel - Very Lo  Silt / Clay - Very So  Moisture Very Wet Wet !  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	oose Loose oft Soft  Moist Damp  Dark  Coarse	Dry  (Circle m Olive Gray  (Circle m Gravel Sa Gravel Sa	stiff Stagor & underling Brown Sitt Sitt Oil Sheen:	e modifi Black e modifi	Very (ying) Clay Clay De Trac	Stiff er	Hard
Sand / Gravel - Very Lo  Silt / Clay - Very So  Moisture Very Wet Wer  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	oose Loose oft Soft  Moist Damp  Dark  Coarse	Dry  (Circle m Olive Gray  (Circle m Gravel Sa Gravel Sa	stiff Stage of Stage	e modifi Black e modifi No	Very (ying) Clay  Clay  Trac	Stiff ere (<5%)	Hard
Sand / Gravel - Very Lo  Silt / Clay - Very So  Moisture Very Wet Wer  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	oose Loose oft Soft  Moist Damp  Dark  Coarse	Dry  (Circle m Olive Gray  (Circle m Gravel Sa Gravel Sa	ajor & underling Brown  ajor & underling Silt  Oil Sheen:  AmecFW P	e modifi Black e modifi No	Very (ying) Clay  Clay  Trac	Stiff ere (<5%)	Hard
Sand / Gravel - Very Lo  Silt / Clay - Very So  Moisture Very Wet Wer  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	oose Loose oft Soft  Moist Damp  Dark  Coarse	Dry  (Circle m Olive Gray  (Circle m Gravel Sa Gravel Sa	stiff Stage of Stage	e modifi Black e modifi Proj. BF 815	Very  ying) Clay  Clay  Trac  22 PCM  Initials:	Stiff or	

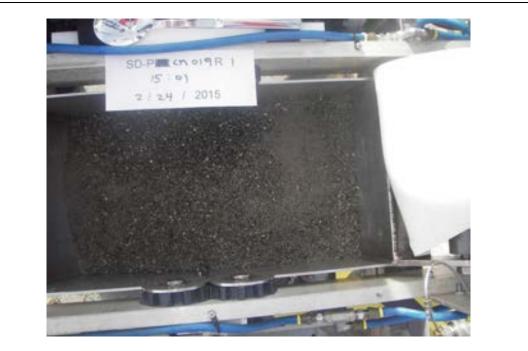


						ate				Sample Ident	
	Coordinate	e Datum			_	/dd/yy)	Project I	ocation		Numbe	
A State Plane, N Z	one, NAD	83, Surve	y Ft		2-27	1-15	Boeing PL2		St	D-PCM_ 2,1	15
		Coor	dinates		2 24	15	Water	Depth			Time
N	orth				East		Depth	Unit	Rep	Gear	
196162				1275	230		16.8	f t		0.2 Grab	1146
Penetration	ep.			40	S	urficial W	ood Estimate	e:			
Depth Unit Ini	tials Similar	₿ we	eather	Fines (%)	С	ontact Po	ints				
/ c m (4)		Suy	my				10-			X 5 =	
urficial sediment	characteri	stics:	75								
Pintentest.	-0	%	Date	ata .	0	%	Oil Sheen:	6	2	Trace (<5%	
Biological:			Deb	nis:			Oil Sneen:	INC	pe	Trace (<5%)	
Moisture	(		let.								
Very Wet	Wet	Мо	est	Damp	Dry						
Color			4.00				or & underlin				
Light C	Medium)	Da	rk.		Olive	Gray (	Brown	Black		Other	
Major Constitue		100			100000000000000000000000000000000000000	Acres 5	or & underlin	ne mod			
Eine	Medium	Co	arse		Gravel	Sand	D Sitt		Clay	-	
Minor Constitue	nt with tra		arse								
Fine	Medialli	-	9618		Gravel	Sand	Silt		Clay		
ubsurface sedime	nt charac	7192	2012/25		Gravel	Sand	Silt	$\supseteq$	Clay	_	
	nt charac	7192		Loose		Sand		Dense	Clay	Very Dense	
Density / Consis	nt charac stency avel -	teristics:	60 (	Loose	> <sub>M</sub>		nse [	Dense	Clay	Very Dense	Hard
Density / Consis	nt charac stency avel -	teristics:	60 (		> <sub>M</sub>	fedium De	nse [		Clay		
Density / Consist Sand / Gr	nt charac stency avel -	teristics: Very Look Very Soft	60 (		> <sub>M</sub>	fedium De	nse [		Clay		
Density / Consist  Sand / Gr  Silt /	stency avel -	teristics: Very Look Very Soft	se (	Soft	⊃ M M Dry	fedium De fedium Sti	nse [	stiff		Very Stiff	
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color	stency avel -	teristics: Very Look Very Soft	se d	Soft	⊃ M M Dry	fedium De fedium Sti	inse D	stiff	ifying	Very Stiff	
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color	avel - Clay - Wet	teristics: Very Look Very Soft Mo	se d	Soft	Dry Olive	fedium De fedium Sti Circle maj	nse C	ne mod Black	ifying	Very Stiff Other	
Density / Consis  Sand / Gr  Silt /  Moisture Very Wet  Color Light  Major Constitue	avel - Clay - Wet	Very Loos Very Soft	se d	Soft	Dry Olive	fedium De fedium Sti Circle maj	or & underli	ne mod Black	ifying	Very Stiff Other	
Density / Consis  Sand / Gr  Silt /  Moisture Very Wet  Color Light  Major Constitue	stency avel - Clay - Medium Medium	Very Loos Very Soft  Mo  Da  Co  ace	se dist	Soft	Dry Olive	Medium De Medium Sti Circle maj Gray Circle maj	or & underli	ne mod Black	ifying:	Very Stiff Other	
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color  Light  Major Constitue  Fine  Minor Constitue	stency avel - Clay - Medium Medium	Very Loos Very Soft  Mo  Da  Co  ace	se d	Soft	Dry Olive	Medium De Medium Sti Circle maj Gray Circle maj	or & underli	ne mod Black	ifying:	Very Stiff Other	
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color  Light  Major Constitue  Fine  Minor Constitue	stency avel - Clay - Medium ant Medium	Very Loos Very Soft  Mo  Da  Co  ace	oist arse	Soft	Dry Olive Gravel	fedium De fedium Str Circle maj Gray Circle ma	or & underli	ne mod Black	ifying ifying Clay	Very Stiff Other	Hard
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color  Light  Major Constitue  Fine  Minor Constitue  Fine	stency avel - Clay - Medium ant Medium	Very Loos Very Soft  Mo  Da  Co  acce	oist arse	Soft	Dry Olive Gravel	fedium De fedium Sti Circle maj Gray Circle ma Sand	or & underli Brown jor & underli d Silt	ne mod Black	ifying Clay Clay	Very Stiff Other	Hard
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color  Light  Major Constitue  Fine  Minor Constitue  Fine  Biological:	stency avel - Clay - Medium ant Medium	Very Loos Very Soft  Mo  Da  Co  acce	oist arse	Soft	Dry Olive Gravel	Medium De Medium Sti  Circle mai Gray  Circle ma Sand	or & underling Brown Silt Silt Oil Sheen:	ne mod Black ne mod	ifying Clay Clay	Other	Hard
Density / Consist  Sand / Gr  Silt /  Moisture Very Wet  Color Light  Major Constitue Fine  Minor Constitue Fine  Biological:	stency avel - Clay - Medium ant Medium	Very Loos Very Soft  Mo  Da  Co  acce	oist arse	Soft	Dry Olive Gravel	Medium De  Medium Sti  Circle maj  Gray  Sand  Sand  Ar	or & underling Brown Silt Silt Oil Sheen:	ne mod Black ne mod	ifying Clay Clay	Other	Hard
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color  Light  Major Constitue  Fine  Minor Constitue  Fine  Biological:	stency avel - Clay - Medium ant Medium	Very Loos Very Soft  Mo  Da  Co  acce	oist arse	Soft	Dry Olive Gravel	Circle maj	or & underling Brown  jor & underling Silt  d Silt  Oil Sheen:	ne mod Black ne mod	ifying Clay Clay	Other	Hard
Density / Consist  Sand / Gr  Silt /  Moisture  Very Wet  Color  Light  Major Constitue  Fine  Minor Constitue  Fine  Biological:	stency avel - Clay - Medium ant Medium	Very Loos Very Soft  Mo  Da  Co  acce	oist arse	Soft	Dry Olive Gravel	Circle maj	or & underling Brown Silt Silt Oil Sheen:	ne mod Black ne mod	ifying Clay Clay one PCM	Other	Hard



Station SD-PCM218 (Replicate of Station SD-PCM018)

	QUALITATIVE S	SAMPLE CHAR	ACTERISTI	CS	F	sgeof
Coordinate D	atum	Date (mm/dd/yy)	Project Lo	ocation	Sample Identi Numbe	
A State Plane, N Zone, NAD 83	, Survey Ft	2-24-15	Boeing PL2	s	D-PCM 010	15
	Coordinates		Water 0	Depth	T	Time
North		East	Depth	Unit Rep	Gear	10000
195875	1275	555	10.2	f t \	0.2 Grab	1501
December 0		K	to a d Eastern to		***************************************	
Penetration Depth Unit Initials V	Weather L %		Vood Estimate			
Depth Unit Initials 65 >	Weather II &	Contact Po	oints		X5 =	
	- I				511000000000000000000000000000000000000	
urficial sediment characteristi	cs:					
Biological:	% Debris:	<u> </u>	Oil Sheen:	None	Trace (<5%)	
Moisture						
Very Wet Wet	Moist Damp	Dry				
Color		(Circle ma	jor & underline	o modifisina		
Light Medium	Dark	Olive Gray	Brown	Black	Other	
		(0)1				
Major Constituent Fine Medium	Coarse	Gravel San	jor & underline	e modifying Clay		
. 0	1070111577315		2			91.97
Minor Constituent with trace	Coarse	Gravel San	d) Silt	Clay	40,10	51/4
Pille Wooldin	Coarse	Graver San	0 ) 311	City	114-	W. B. F. F.
ubsurface sediment character	istics:					
Density / Consistency Sand / Gravel - Ver	ry Loose Loose			ense	Very Dense	
Density / Consistency Sand / Gravel - Ver		Medium Di		1905173)		Hard
Sand / Gravel - Ver	ry Loose Loose	Medium St		1905173)	Very Dense	
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet Wet	ry Loose Loose ry Soft Soft	Medium St	iff St	iff	Very Dense Very Stiff	
Sand / Gravel - Ver	ry Loose Loose ry Soft Soft	Medium St		iff	Very Dense Very Stiff	
Sand / Gravel - Ver Silt / Clay - Ver Moisture Very Wet Wet Color	ry Loose ry Soft Soft  Moist Damp	Medium St Dry (Circle ma Olive Gray	iff St	iff e modifying Black	Very Dense Very Stiff  Other	
Sand / Gravel - Ver Silt / Clay - Ver Moisture Very Wet  Color Light Medium	ry Loose ry Soft Soft  Moist Damp	Medium St Dry (Circle ma Olive Gray	iff St	iff e modifying Black	Very Dense Very Stiff  Other	
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent Fine  Medium	ry Loose Loose ry Soft Soft  Moist Damp  Dark  Coarse	Dry  (Circle ma Olive Gray  (Circle ma	iff St	e modifying Black e modifying	Very Dense Very Stiff  Other	
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent	ry Loose Loose ry Soft Soft  Moist Damp  Dark  Coarse	Dry  (Circle ma Olive Gray  (Circle ma	iff St njor & underlin Brown njor & underlin id Silt	e modifying Black e modifying	Very Dense Very Stiff  Other	
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	ry Loose Ty Soft  Moist  Damp  Dark  Coarse  Coarse	Dry (Circle ma Olive Gray (Circle ma Gravel San	njor & underling Brown njor & underling silt	e modifying Black e modifying Clay	Very Dense Very Stiff  Other	Hard
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light Major Constituent Fine Medium  Minor Constituent with trace	ry Loose Try Soft  Moist  Damp  Dark  Coarse	Dry (Circle ma Olive Gray (Circle ma Gravel San	iff St njor & underlin Brown njor & underlin id Silt	e modifying Black e modifying Clay None	Very Dense Very Stiff  Other	Hard
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent Fine  Medium  Minor Constituent with trace Fine  Medium  Biological:	ry Loose Ty Soft  Moist  Damp  Dark  Coarse  Coarse	Dry (Circle ma Olive Gray (Circle ma Gravel San	njor & underling Brown njor & underling silt	e modifying Black e modifying Clay None	Very Dense Very Stiff  Other  Trace (<5%)	Hard
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent Fine  Medium  Minor Constituent with trace Fine  Medium  Biological:	ry Loose Ty Soft  Moist  Damp  Dark  Coarse  Coarse	Dry (Circle ma Olive Gray (Circle ma Gravel San	ajor & underling Brown Silt Silt Oil Sheen:	e modifying Black e modifying Clay None	Very Dense Very Stiff  Other  Trace (<5%)	Hard
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent Fine  Medium  Minor Constituent with trace Fine  Medium  Biological:	ry Loose Ty Soft  Moist  Damp  Dark  Coarse  Coarse	Dry (Circle ma Olive Gray (Circle ma Gravel San	ajor & underling Brown Silt Silt Oil Sheen:	e modifying Black e modifying Clay None	Very Dense Very Stiff  Other  Trace (<5%)	Hard
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent Fine  Medium  Minor Constituent with trace Fine  Medium  Biological:	ry Loose Ty Soft  Moist  Damp  Dark  Coarse  Coarse	Dry (Circle ma Olive Gray (Circle ma Gravel San	ajor & underling Brown  ajor & underling Silt  od Silt  Oil Sheen:  AmecFW  SD-PCM0	e modifying Black e modifying Clay None Proj. BP2 F	Very Dense Very Stiff  Other  Trace (<5%)	Hard
Sand / Gravel - Ver  Silt / Clay - Ver  Moisture Very Wet  Color Light  Major Constituent Fine  Medium  Minor Constituent with trace Fine  Medium  Biological:	ry Loose Ty Soft  Moist  Damp  Dark  Coarse  Coarse	Dry (Circle ma Olive Gray (Circle ma Gravel San	ajor & underling Silt Silt Oil Sheen:  AmecFW  SD-PCM0  QSC Form	e modifying Black e modifying Clay None Proj. BP2 F	Very Dense Very Stiff  Other  Trace (<5%)	Hard



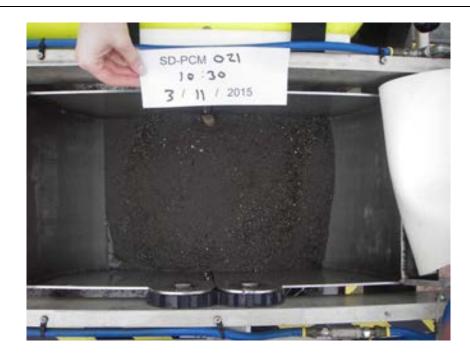
		QUAL	ITATIVE S	AMPLE CH	IARAC'	TERISTI	CS			Page of
	Coordina	te Datum		Date (mm/dd		Project Lo	ocation	T	Sample Identi Numbe	
WA State Plane, N.	Zone, NAD	83, Survey F	t	3-11-	-15 B	being PL2		S	D-PCM 020	15
19□3□9		Coordin	alae			Water 0	Sonth			Time
		Coordin	ates	East		Depth	Unit	Pan	Gear	Time
19830	North		1272			G-1	ft	rep	0.2 Grab	1047
1403			.616	111		0-1	1111	_	U.Z Grab	
Penetration	epilitials Sulfide	∢	8 _	Surfi	cial Wood	Estimate	:			
	nitials 👼	9 Weath	er Eines	Cont	act Points	5				
( c m 6	200	YAin				_		- 2	X5 =	%
Surficial sediment	character	ristics:								
	0			- 1						
Biological:	0	%	Debris:	-1	_% 0	il Sheen:	No	one	Trace (<5%)	%
Moisture	_									
Very Wet	Wet	) Moist	Damp	Dry						
0-1				(0)		destin		fides.		
Color Light	Medium	) Dark				s underline rown	Black		Other	
				(0.04) 50	. (					
Major Constitue		C	20			& underlin	e modi			
Find	Medium	Coars	8	Gravel	Sand	Silt		Clay	_	
Minor Constitu	ent with t	race								
Fine	Medium	Coars	e	Gravel	Sand	Silt		Clay	<u> </u>	
Sand / G	77-576.5	Very Loose	Loose		um Dense		ense		Very Dense	
Silt /	Clay -	Very Soft	Soft	Medi	ium Stiff	St	iff		Very Stiff	Hard
Moisture										
Very Wet	Wet	Moist	Damp	Dry					4	
Color				(Circ	le major	& underlin	e mod	ifvina	trac	ce orange
Light	Medium	Dark	)			rown	Black		Other	
22020020020000000	5752						<u> </u>			
Major Constitu Fine	ent Medium	Coars	е	Gravel	Sand	& underlin Silt	e mod	Clay	•	
Minor Constitu	ent with t	race			0					
Fine )	Medium	Coars	e	Gravel	Sand	Silt		Clay		<u> </u>
Biological:	0	%	Debris:	5	e	il Sheen:	6	one)	Trace (<5%)	%
biological.			Debits.		-"	an Sheem.				
Comments:	erene	- 0							***************************************	
-tw 195	200	Surface	-M 111	1.1.1.2	11 0000 0		_	_		
5+1/1/1	Ad DI	E apply	bettern	619	urtare	AmecFV	N Deni	BP2	PCM	87-5
Marie	00/00	Near	mutina	depto		Amech	V Ploj		Water 650	=
- 0	8415		1	4		SD-PCN	M0201	5 11	nitials: 637	
77					_	QSC F	orm		The same of the sa	_
						Date:	3 1	1 /2	015 Time: \c	9/_ =
						Date				

Amm/Field Forms/QSC

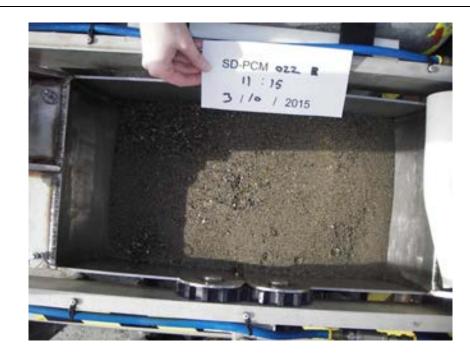


Station SD-PCM020

	QUALITATIVE SA	MPLE CHARA	CTERISTICS		P	age of
Coordinate Da	tum	Date (mm/dd/yy)	Project Locatio		Sample Identifi Number	cation
VA State Plane, N Zone, NAD 83,	Survey Ft	3-11-15	Boeing PL2	SD	PCM_ 0 2 \	15
	Coordinates		Water Depth			Time
North		East	Depth Unit	Rep	Gear	20000000
198281	12729	19	5.3 f	1	0.2 Grab	1030
Penetration  Depth Unit Initials 000  Graph Com 6500  Surficial sediment characteristics	Weather E &	Surficial Wo Contact Poir	od Estimate: nts	_	X5 = _	%
Biological:	_% Debris:	0_%	Oil Sheen: N	lone	Trace (<5%)	%
Moisture Very Wet Wet	Moist Damp	Dry				
Color Light Medium	Dark		Brown Blac		Other	
Major Constituent Fine Medium	Coarse	(Circle majo Gravel Sand	Silt	difying) Clay		
Minor Constituent with trace Fine Medium	Coarse	Gravel Sand	Silt	Clay	_	
Sand / Gravel - Very Silt / Clay - Very	Loose Loose Soft Soft	Medium Den			Very Dense	120000-
Moisture	Soft Soft	Medium Stiff	Stiff		Very Stiff	Hard
Moisture Very Wet Wet	Moist Damp	Dry (Circle majo	r & underline mod			Hard
Moisture Very Wet  Color Light Medium		Dry (Circle majo Olive Gray	r & underline mod Brown Blac	k	Very Stiff Other	Hard
Moisture Very Wet Wet	Moist Damp	Dry (Circle majo Olive Gray	r & underline mod	k		Hard
Moisture Very Wet  Color Light Medium  Major Constituent	Moist Damp	Dry (Circle majo Olive Gray (Circle majo	r & underline mod Brown Blac r & underline mod	k difying)		Hard
Moisture Very Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	Moist Damp  Dark  Coarse	Olive Gray  (Circle majo (Circle majo Gravel Sand	r & underline mod Brown Blac r & underline mod Silt	k difying) Clay		Hard
Moisture Very Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	Moist Damp  Dark  Coarse  Coarse	Olive Gray  (Circle majo (Circle majo Gravel Sand	r & underline moder & underline moder & silt Silt Oil Sheen:	difying) Clay Clay	Other	



6.0	QUALITATIVE SA	MPLE CHARA	CTERISTICS	Page	of
Coordinate Da	tum	Date (mm/dd/yy)	Project Location	Sample Identificat Number	tion
VA State Plane, N Zone, NAD 83, S	Survey Ft	3-10-15	Boeing PL2	SD-PCM # 22	_15
	Coordinates		Water Depth		Time
North		East	Depth Unit R	ep Gear	, ,,,,,
196689	127 4829		6.4 ft		115
Penetration  Depth Unit Initials SO	Weather L &		ood Estimate:		
Depth Unit Initials & >	Weather E	Contact Po	ints	X 5 =	
<del></del>	. /				
urficial sediment characteristics	i:	2			
Biological:	% Debris:(	O%	Oil Sheen: None	Trace (<5%)	
Moisture					
Very Wet (Wet)	Moist Damp	Dry			
21111					
Color Light Medium	Dark	Olive Gray	or & underline modifyi Brown Black	ng) Other	
Major Constituent Fine Medium	Coarse	(Circle maj Gravel (Sand	or & underline modifyi	ng) lay	
	Course	Citro Cari	,		
Minor Constituent with trace		0 6	, was 6		
Fine Medium	Coarse	Gravel Sand	) sint c	lay	
S. 1770-1780-1780-1780-1780-1780-1780-1780-	Loose Loose	Medium De	(0.05) ST.18078	Very Dense	
Silt / Clay - Very	Soft Soft	Medium Stif	ff Stiff	Very Stiff	Hard
Moisture Very Wet Wet	Moist Damp	Dry			
Color		(Circle maj	or & underline modify	ing)	
Light Medium	Dark	Olive Gray	Brown Black	Other	
Major Constituent		(Circle mai	or & underline modify	ina)	
Fine Medium	Coarse	Gravel Sand		lay	
Minor Constituent with trace		3			
Fine Medium	Coarse	Gravel Sans	Sit C	lay	
Platestest:	W Bublic	a			63
Biological:	% Debris:	%	Oil Sheen: None	Trace (<5%)	
Comments:	- 1 vojat - 1	sor genetiation	n		
attempt 2 such	CSMAIL		AmecFW Proj. BP2	PCM	_
			557		
			SD-PCM02215 In	itials:	
			QSC Form	****	
			Date: 3 / 10 /20	15 Time:	

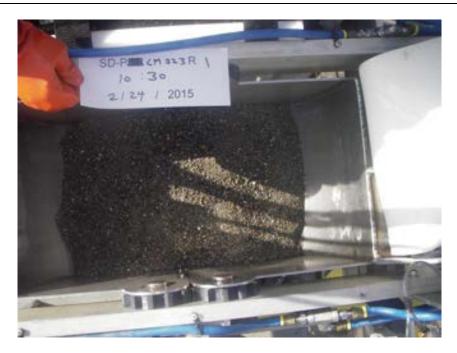


Station SD-PCM022

	QUALITATIVE	SAMPLE CHAR	ACTERISTI	CS	P	age of _
Coordinate Da	atum	Date (mm/dd/yy)	Project Lo	ocation	Sample Identif Number	
A State Plane, N Zone, NAD 83,	Survey Ft	2-24-15	Boeing PL2	s	D-PCM 053	15
	Coordinates		Water D	Depth		Time
North		East	Depth	Unit Rep	Gear	
196374	127	5190	8.2	ftl	0.2 Grab	1016
Penetration 9	92	Surficial V	Vood Estimate:	į.		
Penetration Depth Unit Initials	Weather LE &	Contact P	oints			
15 cm 65m	5 many	_	-		X5 = .	
urficial sediment characteristic	s:					
Biological:	% Debris:	0 %	Oil Sheen:	None	Trace (<5%)	
Moisture						
Very Wet Wet	Moist Dam	p Dry				
Color		(Circle ma	jor & underline	modifying	)	
Light Medium	Dark	Olive Gray		Black	Other	
Major Constituent		(Circle ma	οίος & underline	modifying	)	
Fine Medium	Coarse	Gravel San	d Silt	Clay		
Minor Constituent with trace				2.0		
Fine Medium	Coarse	Gravel San	nd ) Silt	Clay		
ubsurface sediment characteris	stics:				(A	
Density / Consistency Sand / Gravel - Very	Loose Loos		ense De	ense	Very Dense	720 176
Density / Consistency Sand / Gravel - Very		Medium D	ense De	ense	2.	Hard
Sand / Gravel - Very Silt / Clay - Very Moisture	/ Loose Loos / Soft Soft	Medium S	ense De	ense	Very Dense	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet	Loose Loos	Medium S	ense De tiff St	ense	Very Dense Very Stiff	Hard
Sand / Gravel - Very Silt / Clay - Very Moisture	/ Loose Loos / Soft Soft	Medium S	ense De	ense	Very Dense Very Stiff	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color	Loose Loos Soft Soft Moist Dam	Medium S  Dry  (Circle may Olive Gray	ense De tiff St ajor & underline Brown	ense iff e modifying Black	Very Dense Very Stiff  Other	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent	/ Loose Loos / Soft Soft Moist Dam Dark	Medium S  Dry  (Circle material)  Olive Gray  (Circle material)	ense De tiff St ajor & underline Brown ajor & underline ajor & underline	ense iff e modifying Black e modifying	Very Dense Very Stiff  Other	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace	/ Loose Loos / Soft Soft Moist Dam Dark Coarse	Medium S  IP Dry  (Circle material Circle Circl	ense De tiff St ajor & underline Brown ajor & underline ajor & underline	ense iff e modifying Black e modifying Clay	Very Dense Very Stiff  Other	Hard
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium	/ Loose Loos / Soft Soft  Moist Dam  Dark  Coarse  Coarse	Medium S  (Circle material Colive Graye)  Gravel Sar  Gravel Sar	ense De tiff St  ajor & underline Brown ajor & underline d Silt Oil Sheen:	ense  emodifying Black emodifying Clay None	Very Dense Very Stiff  Other	
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loos Soft Soft  Moist Dam  Dark  Coarse  Coarse  Mebris:	Medium S  (Circle material Colive Gray  (American American American American American Colive Gray  American American American American American Colive Gray  American American American American Colive Gray  American American Colive Gray  (Circle material Colive Gray  (Circle m	ense De tiff St  ajor & underline Brown  ajor & underline d Silt	ense iff e modifying Black e modifying Clay None	Very Dense Very Stiff  Other  Trace (<5%)	
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loos Soft Soft  Moist Dam  Dark  Coarse  Coarse  Mebris:	Medium S  (Circle material Colive Gray  (American Sp	ajor & underline Brown ajor & underline Silt Oil Sheen: DecFW Proj. BF	ense iff e modifying Black e modifying Clay None	Very Dense Very Stiff  Other  Trace (<5%)	
Sand / Gravel - Very  Silt / Clay - Very  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with trace Fine Medium  Biological:	Loose Loos Soft Soft  Moist Dam  Dark  Coarse  Coarse  Mebris:	Medium S  (Circle material Colive Gray)	ense De tiff St  ajor & underline Brown ajor & underline d Silt Oil Sheen:	ense  iff  e modifying Black e modifying Clay None	Very Dense Very Stiff  Other  Trace (<5%)	

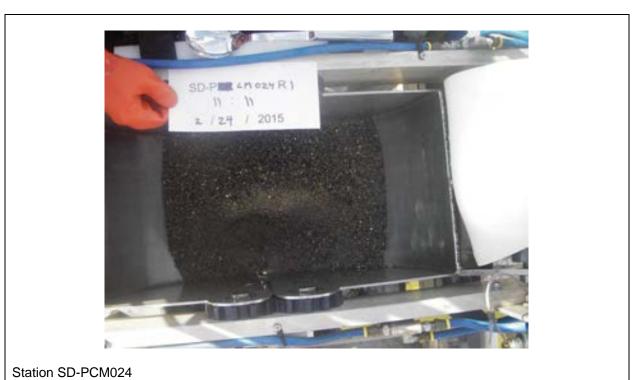


	ATIVE SAMPLE	CHARAC	IERISTICS		Pa	ege of
Coordinate Datum		Date n/dd/yy)	Project Locati		Sample Identifi Number	cation
A State Plane, N Zone, NAD 83, Survey Ft	5-2	29-15	Boeing PL2	SD	-PCM_ 223	15
Coordinate	98		Water Dept	h		Time
North	East			nit Rep	Gear	
196373	1275187		8.5 f	t )	0.2 Grab	1030
Penetration 9		Surficial Woo	d Estimate:			
Penetration  Depth Unit Initials S N Weather	8 3	Contact Poin				
12 cm sm smy	1 ,	Joinact Polit			X5 =	
urficial sediment characteristics:						
urnicial sediment characteristics.	21			-		
Biological:% D	ebris:0	%	Oil Sheen:	None	Trace (<5%)	
Moisture						
Very Wet Wet Moist	Damp Dry					
Color		Circle major	& underline mo	odifying)		
Light Medium Dark	Olive		Brown Bla		Other	
Major Constituent		Circle major	& underline mo	odifyina)		
Fine Medium Coarse	Gravel	Sand	Silt	Clay	·	
Minor Constituent with trace						
Fine Medium Coarse	Gravel	Sand	Silt	Clay		
Density / Consistency  Sand / Gravel - Very Loose	_	Medium Dens		r	Very Dense	
Silt / Clay - Very Soft	Soft	Medium Stiff	Stiff		Very Stiff	Hard
Moisture Very Wet Wet Moist	Damp Dry					
Color Light Medium Dark	Olive		& underline me Brown Bla		Other	
Major Constituent		(Circle major	& underline me	odifying)		
Fine Medium Coarse	Gravel	Sand	Silt	Clay		
Minor Constituent with trace						
Fine Medium Coarse	Gravel	Sand	Silt	Clay		
Biological:% D	ebris:	%	Oil Sheen:	None	Trace (<5%)	
Comments:						
			AmecFW P	roi BP2	PCM	_
			SD-PCM22	11.50		_
			_		migia.	_
			<ul> <li>QSC Form</li> </ul>			
			Date: =	1 27 120	015 Time:	020 -

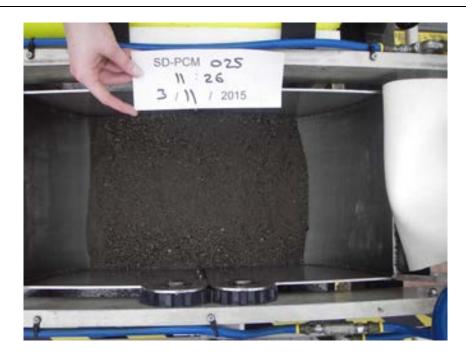


Station SD-PCM223 (Duplicate of Station SD-PCM023)

						T -	ate	1				Sample Identi	fication
	Coordi	inate D	atum			4.04.50.50	/dd/yy)		Project Lo	cation		Numbe	
A State Plane,	N Zone, N	AD 83,	Survey F	1		2.29	-15	Во	eing PL2		SI	D-PCM_ 024	15
			Coordin	ates					Water D	epth			Time
	North					East			Depth	Unit	Rep	Gear	A. 1807-1
1950	199			1.	275	484			8.0	f t	1	0.2 Grab	1111
Penetration		e l		9		s	urficial W	lood	Estimate:				
Depth Unit	Initials	Sulfide	Weat	her L	8	c	ontact Po	oints					
	655		SMAN						1000			X 5 =	
, Irficial sedime	nt charac	teristic	os:										
	6	-				3							
Biological:	-	600	%	Debris:	_	9	%	Oil	Sheen:	(No	DE	Trace (<5%)	
Moisture													
Very Wet	Wé	0	Moist	D	amp	Dry							
Color						10	Circle ma	ior &	underline	modi	(vina)		
Light	Mediur	0	Dark			Olive	Gray		OWD	Black		Other	
							Neste me	10	deatha		6 d = = 1	- C. C. C.	
Major Consti	Mediur	Cor.	Coars	e		Gravel	San		underline	modi	Clay		
0,000.0		-7	1000000	231		MIDS BUSIN					85387	-	50.5
Minor Consti Fine	tuent with Mediur		Coers	2		Seekly Trail	_	2	0.74			to	Fre bou
1 010	14160101					Gravel	San	ω.	2500		Clav	11666 1	
bsurface sedi		racteri				Gravel	<u>San</u>	9	Silt		Clay	1722	
Density / Cor	nsistency Gravel -	Ver	istics:	C	oose	> M	fedium De	ense	De	ense	Clay	Very Dense	
Density / Cor	nsistency	Ver	istics:	C	oose	> M		ense			Clay		Hard
Density / Cor Sand / Sil Moisture	Gravel -	Ver Ver	istics: ry Loose ry Soft	CLI S	oft	> M	fedium De	ense	De		Clay	Very Dense	
Density / Cor Sand / Sil	nsistency Gravel -	Ver Ver	istics:	CLI S	-	> M	fedium De	ense	De		Clay	Very Dense	
Density / Cor Sand / Sil Moisture Very Wet	Gravel - t / Clay -	Ver Ver	istics:  ry Loose ry Soft  Moist	CLI S	oft	Ory (	fedium De fedium St Circle ma	ense tiff	De St underlin	iff e mod	ifying	Very Dense Very Stiff	
Density / Cor Sand / Sil Moisture Very Wet	Gravel -	Ver Ver	istics: ry Loose ry Soft	CLI S	oft	⊃ M M Dry	fedium De	ense tiff	De St	iff	ifying	Very Dense Very Stiff	
Density / Cor Sand / Sil Moisture Very Wet	Gravel -  It / Clay -  We	Ver Ver	istics:  ry Loose ry Soft  Moist	CLI S	oft	Dry (Olive	Medium De Medium St Circle ma Gray	ense tiff ajor &	De St underlin	e mod Black	ifying	Very Dense Very Stiff Other	
Sand / Sill Moisture Very Wet Color Light	Gravel -  It / Clay -  We	Ver Ver	istics:  ry Loose ry Soft  Moist	S D	oft	Dry (Olive	Medium De Medium St Circle ma Gray	ense hiff ajor & Br	De St underlin	e mod Black	ifying	Very Dense Very Stiff Other	
Sand / Sil Moisture Very Wet Color Light Major Consti	Gravel -  It / Clay -  We  Medium  Medium	Ver Ver	istics:  ry Loose  ry Soft  Moist  Dark  Coars	S D	oft	Dry Olive	Medium De Medium St Circle ma Gray Circle ma	ense hiff ajor & Br	St underlin	e mod Black	ifying	Very Dense Very Stiff Other	
Moisture Very Wet  Color Light  Major Consti	Gravel -  It / Clay -  We  Medium  Medium	Ver Ver	istics:  ry Loose  ry Soft  Moist  Dark  Coars	Se D	oft	Dry Olive	Medium De Medium St Circle ma Gray Circle ma	ense tiff Br	St underlin	e mod Black	ifying	Very Dense Very Stiff Other	
Moisture Very Wet  Color Light  Major Consti Fine  Minor Consti	Gravel -  It / Clay -  We  Medium  Medium  Medium  Medium	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se Se Se	oft	Dry Olive Gravel	Medium De Medium St Circle ma Gray Circle ma San	ense tiff Brajor &	underlin Silt	e mod Black e mod	ifying Clay Clay	Very Dense Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Consti	Gravel -  It / Clay -  We  Medium  Medium  Medium  Medium	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se D	oft	Dry Olive Gravel	Medium St Medium St Circle ma Gray Circle ma San	ense tiff Brajor &	own own sit	e mod Black e mod	ifying ifying Clay	Very Dense Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Consti Fine  Minor Consti	Gravel -  It / Clay -  We Medium tuent with the distribution with the distribution of the control of the contro	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se Se Se	oft	Dry Olive Gravel	Medium St Medium St Circle ma Gray Circle ma San San	ense siff Brajor &	underling Silt Silt I Sheen:	e modi Black e mod	ifying Clay Clay	Very Dense Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Consti Fine  Minor Consti Fine  Biological:	Gravel -  It / Clay -  We Medium tuent with the distribution with the distribution of the control of the contro	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se Se Se	oft	Dry Olive Gravel	Medium St Medium St Circle ma Gray Circle ma San San	ense tiff Br Br Oi	underlin own underlin Silt Silt	e modi Black e mod	ifying Clay Clay	Very Dense Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Consti Fine  Minor Consti Fine  Biological:	Gravel -  It / Clay -  We Medium tuent with the distribution with the distribution of the control of the contro	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se Se Se	oft	Dry Olive Gravel	Medium St Medium St Circle ma Gray Circle ma San San	ense eiff Brajor & ajor &	underling Silt Silt Sheen:	e modi Black e mod	ifying Clay Clay	Very Dense Very Stiff Other	Hard
Sand / Sil  Moisture Very Wet  Color Light  Major Consti Fine  Minor Consti Fine  Biological:	Gravel -  It / Clay -  We Medium tuent with the distribution with the distribution of the control of the contro	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se Se Se	oft	Dry Olive Gravel	Medium St Medium St Circle ma Gray Circle ma San San	ense eiff Brajor & ajor &	underling Silt Silt Sheen:	e modi Black e mod	ifying Clay Clay	Very Dense Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Consti Fine  Minor Consti Fine  Biological:	Gravel -  It / Clay -  We Medium tuent with the distribution with the distribution of the control of the contro	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se Se Se	oft	Dry Olive Gravel	Medium St Medium St Circle ma Gray Circle ma San San	ense siff Brajor & do	underling Silt Silt Sheen:	e modi Black e modi	ifying Clay Clay	Very Dense Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Consti Fine  Minor Consti Fine  Biological:	Gravel -  It / Clay -  We Medium tuent with the distribution with the distribution of the control of the contro	Ver Ver	istics:  ry Loose ry Soft  Moist  Dark  Coars	Se Se Se	oft	Dry Olive Gravel	Medium St Medium St Circle ma Gray Circle ma San San	ense siff Braior &	underling Silt Silt Silt Silt Sheen: AmecFV SD-PCM QSC For	e modi Black e modi V Proj 0241:	ifying Clay Clay one BP2	Very Dense Very Stiff Other	Hard



	QUALITAT	IVE OAII	0		-	-	age of _
Coordinate	e Datum		Date (mm/dd/yy)	Project L		Sample Identifi Number	cation
A State Plane, N Zone, NAD	83, Survey Ft		3-11-15	Boeing PL2	st	PCM 02S	15
	Coordinates			Water 0	Depth		Time
North			East	Depth	Unit Rep	Gear	
198532		2770	+6	14.3	f t	0.2 Grab	1126
Penetration 9	T	40	Surficial W	ood Estimate			
Penetration Penetration Depth Unit Initials	Weather	Fines (%)	Contact Po				
c m 6 > A	rain		337111111111	_		X5 =	
urficial sediment characteri	stics:						
		. ,	a)	07.01			
Biological:	% Debri	s:(	/%	Oil Sheen:	None	Trace (<5%)	
Moisture	)	D	Dec				
Very Wet Wet	Moist	Damp	Dry				
Color	) 8-4			or & underlin			
Light Medium	Dark		Olive Gray	Brown	Black	Other	
Major Constituent Fine Medium	Coarse	,	(Circle maj Gravel Sand	or & underlin	e modifying) Clay		
Fine Medium	Coarse		Sand	) 311	Ciay		
Minor Constituent with tra	ace						
			Crown Cond	Olle	Clave		
Fine Medium  ubsurface sediment charac	Coarse	(	Gravel Sand	Silt	Clay	W	
Fine Medium  ubsurface sediment charact  Density / Consistency	Coarse	Loose	Gravel Sand  Medium De		Clay	Very Dense	- 75
Fine Medium  ubsurface sediment charac  Density / Consistency  Sand / Gravel -	Coarse teristics:			nse De	anse	Very Dense Very Stiff	Hard
Fine Medium  ubsurface sediment charac  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture	Coarse teristics: Very Loose	Loose Soft	Medium De Medium Stif	nse De	anse		Hard
Fine Medium  ubsurface sediment charac  Density / Consistency  Sand / Gravel -  Silt / Clay -	Coarse teristics: Very Loose	Loose	Medium De	nse De	anse		Hard
Fine Medium  absurface sediment charac  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture  Very Wet Wet  Color	Coarse teristics:  Very Loose Very Soft  Moist	Loose Soft Damp	Medium De Medium Stif Dry (Circle maj	nse De ff Si or & underlin	anse iff e modifying)	Very Stiff	Hard
Fine Medium  ubsurface sediment charac  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture  Very Wet Wet	Coarse teristics:  Very Loose Very Soft	Loose Soft Damp	Medium De Medium Stif	nse De	ense	Very Stiff	Hard
Fine Medium  ubsurface sediment charact  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture Very Wet Wet  Color Light Medium  Major Constituent	Coarse teristics:  Very Loose Very Soft  Moist  Dark	Loose Soft Damp	Medium De  Medium Stil  Dry  (Circle maj  Olive Gray  (Circle maj	or & underlin	e modifying) Black e modifying)	Very Stiff Other	Hard
Fine Medium  ubsurface sediment charact  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture  Very Wet Wet  Color  Light Medium	Coarse teristics:  Very Loose Very Soft  Moist	Loose Soft Damp	Medium De Medium Stit Dry (Circle maj Olive Gray	or & underlin	anse iff e modifying) Black	Very Stiff Other	Hard
Fine Medium  absurface sediment charact  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture  Very Wet Wet  Color  Light Medium  Major Constituent  Fine Medium  Minor Constituent with tra	Coarse  teristics:  Very Loose  Very Soft  Moist  Dark  Coarse	Loose Soft Damp	Medium De  Medium Stif  Dry  (Circle maj  Olive Gray  (Circle maj  Gravel Sand	or & underling Brown Silt	ense  e modifying)  Black  e modifying)  Clay	Very Stiff Other	Hard
Fine Medium  ubsurface sediment charact  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture  Very Wet Wet  Color  Light Medium  Major Constituent  Fine Medium	Coarse teristics:  Very Loose Very Soft  Moist  Dark  Coarse	Loose Soft Damp	Medium De  Medium Stil  Dry  (Circle maj  Olive Gray  (Circle maj	or & underling Brown Silt	e modifying) Black e modifying)	Very Stiff Other	Hard
Fine Medium  absurface sediment charact  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture  Very Wet Wet  Color  Light Medium  Major Constituent  Fine Medium  Minor Constituent with tra	Coarse  teristics:  Very Loose  Very Soft  Moist  Dark  Coarse	Loose Soft Damp	Medium De  Medium Stif  Dry  (Circle maj  Olive Gray  (Circle maj  Gravel Sand	or & underling Brown Silt	ense  e modifying)  Black  e modifying)  Clay	Very Stiff Other	Hard
Fine Medium  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with tra Fine Medium  Biological:  Comments:	Coarse  teristics:  Very Loose  Very Soft  Moist  Dark  Coarse  ace  Coarse  Mobiet  Debri	Loose Soft Damp	Medium De  Medium Stif  Dry  (Circle maj  Olive Gray  (Circle maj  Gravel Sanc	or & underling Brown Silt Silt Oil Sheen:	e modifying) Black e modifying) Clay Clay	Other	
Fine Medium  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with tra Fine Medium  Biological:	Coarse  teristics:  Very Loose  Very Soft  Moist  Dark  Coarse  ace  Coarse  Mobiet  Debri	Loose Soft Damp	Medium De  Medium Stif  Dry  (Circle maj  Olive Gray  (Circle maj  Gravel Sanc	or & underling Brown Silt Silt Oil Sheen:	e modifying) Black e modifying) Clay Clay	Other	
Fine Medium  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with tra Fine Medium  Biological:  Comments:	Coarse  teristics:  Very Loose  Very Soft  Moist  Dark  Coarse  ace  Coarse  Mobiet  Debri	Loose Soft Damp	Medium De  Medium Stif  Dry  (Circle maj  Olive Gray  (Circle maj  Gravel Sanc	or & underling Silt  Oil Sheen:	e modifying) Black e modifying) Clay Clay None	Other	
Fine Medium  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with tra Fine Medium  Biological:  Comments:	Coarse  teristics:  Very Loose  Very Soft  Moist  Dark  Coarse  ace  Coarse  Mobiet  Debri	Loose Soft Damp	Medium De  Medium Stif  Dry  (Circle maj  Olive Gray  (Circle maj  Gravel Sanc	or & underling Silt Silt Oil Sheen:	e modifying) Black e modifying) Clay Clay None	Other	
Fine Medium  Density / Consistency  Sand / Gravel -  Silt / Clay -  Moisture Very Wet Wet  Color Light Medium  Major Constituent Fine Medium  Minor Constituent with tra Fine Medium  Biological:  Comments:	Coarse  teristics:  Very Loose  Very Soft  Moist  Dark  Coarse  ace  Coarse  Mobiet  Debri	Loose Soft Damp	Medium De  Medium Stif  Dry  (Circle maj  Olive Gray  (Circle maj  Gravel Sanc	or & underling Brown Silt Silt Oil Sheen:  AmecFW F SD-PCM02  QSC Form	e modifying) Black e modifying) Clay  Clay  None  Proj. BP2 PC	Other	



Station SD-PCM025

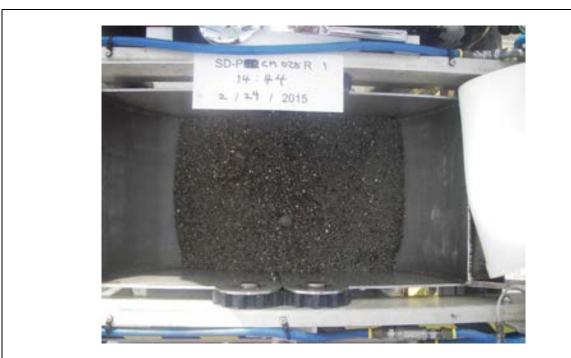
										Page of _
	Coordinate D	Datum		(mm/	ate dd/yy)	Project L	ocation		Sample Identi Numbe	
A State Plane, N Zo	ne, NAD 83	, Survey Ft		3-10	5-15 B	loeing PL2		SD	PCM º 2	15
		Coordinat	es			Water 0	Depth			Time
No	rth		***************************************	East		Depth	Unit	Rep	Gear	0110700
196926			12745	32		4.4	ft		0.2 Grab	1056
Penetration	g .		90	Sı	rficial Woo	d Estimate				
	Sulfide	Weathe	Fines (%)	9.55	ntact Point					
4 cm 65		g cl-pd	y			100 <u>100 </u>		_	X5 =	1 1 1 1
rficial sediment c	haracteristi	cs:								
Biological:	0	% D	ebris:	0	% (	Oil Sheen:	Nor	(0)	Trace (<5%)	
		_ " "			_ ~ `	on oncen.	(140)		11000 (-070)	-
Moisture Very Wet	Wet)	Moist	Damp	Dry						
14700000		5,74,055		2.5				2002		
Color Light /N	Medium )	Dark		Olive (C	Gray (8	& underlin Brown	e modify Black		Other	
. (					. (				7.100 A	
Major Constituer Fine	/fedium	Coarse		(C Gravel	Sand	& underlin Silt		ying) Clay		
						1.07572				
Minor Constituer Fine M	nt with trace Medium	Coarse		Gravel	Sand	Silt		Clay		
Density / Consist	tency									
Density / Consist		ry Loose	Loose	) м	edium Dens	e D	ense		Very Dense	
	<u>ivel -</u> Ve		Loose		edium Dens		ense		Very Dense	Hard
Sand / Gra	<u>ivel -</u> Ve	ry Loose ry Soft					333333		SALTHAGE SECTOR	Hard
Sand / Gra	<u>ivel -</u> Ve						333333		SALTHAGE SECTOR	Hard
Sand / Gra Silt / C Moisture Very Wet	ivel - Ve	ry Soft	Soft	M Dry	edium Stiff	Si	iff		SALTHAGE SECTOR	Hard
Sand / Gra Silt / C Moisture Very Wet Color	ivel - Ve	ry Soft	Soft	M Dry	edium Stiff	Si	iff		SATERIOR SECRE	Hard
Sand / Gra Silt / C Moisture Very Wet Color Light	Wet Ve	ry Soft Moist	Soft	Dry (C Olive	edium Stiff Sircle major Gray	& underlin	iff e modif Black	ying)	Very Stiff	Hard
Sand / Gra Silt / C  Moisture Very Wet  Color Light  Major Constituer	Wet Ve	ry Soft Moist	Soft	Dry (C Olive	edium Stiff	& underlin	e modif Black e modif	ying)	Very Stiff	Hard
Sand / Gra Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine	Wet  Medium  Medium	Moist Dark Coarse	Soft	Dry (COlive	edium Stiff Fircle major Gray	& underlin	e modif Black e modif	ying) ying)	Very Stiff	Hard
Sand / Gra Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine	Wet  Medium  Medium	Moist Dark Coarse	Soft	Dry (COlive	edium Stiff Fircle major Gray	& underlin	e modif Black e modif	ying) ying)	Very Stiff	Hard
Sand / Gra Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine	Wet  Medium  Adedium  It with trace	Moist Dark Coarse Coarse	Soft	Dry (C Olive (C Gravel	edium Stiff  Circle major Gray  Circle major Sand	& underlin Brown & underlin Silt	e modif Black e modif	ying) ying) Clay	Very Stiff	
Sand / Gra  Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine  Minor Constituer Fine	Wet  Medium  Medium  It with trace  Medium	Moist Dark Coarse Coarse	Soft	Dry  Olive  (C)  Gravel  Gravel	edium Stiff  Circle major Gray  Circle major Sand  Sand	& underlin Brown & underlin Silt Silt	e modif Black e modif	ying) ying) Clay Clay	Very Stiff Other	
Sand / Gra  Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine  Minor-Constituer Fine	Wet  Medium  Medium  It with trace  Medium	Moist Dark Coarse Coarse	Soft Damp	Dry  Olive  (C)  Gravel  Gravel	edium Stiff  Circle major Gray  Circle major Sand  Sand	& underlin Brown & underlin Silt Silt	e modif Black e modif	ying) ying) Clay Clay	Other	
Sand / Gra  Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine  Minor Constituer Fine	Wet  Medium  Medium  It with trace  Medium	Moist Dark Coarse Coarse	Soft Damp	Dry  Olive  (C)  Gravel  Gravel	edium Stiff  Circle major Gray  Circle major Sand  Sand	& underlin Brown & underlin Silt Silt	e modif Black e modif	ying) ying) Clay Clay	Other	
Sand / Gra  Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine  Minor Constituer Fine	Wet  Medium  Medium  It with trace  Medium	Moist Dark Coarse Coarse	Soft Damp	Dry  Olive  (C)  Gravel  Gravel	edium Stiff  Circle major Gray  Circle major Sand  Sand	& underlin Brown & underlin Silt Silt Oil Sheen:	e modif Black e modif	ying) ying) Clay Clay	Other	
Sand / Gra  Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine  Minor Constituer Fine  Biological:	Wet  Medium  Medium  It with trace  Medium	Moist Dark Coarse Coarse	Soft Damp	Dry  Olive  (C)  Gravel  Gravel	edium Stiff  Circle major Gray  Circle major Sand  Sand	& underlin Brown & underlin Silt Silt Oil Sheen:	e modif Black e modif	ying) Ying) Clay Clay BP2	Other Trace (<5%)	
Sand / Gra  Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine  Minor Constituer Fine  Biological:	Wet  Medium  Medium  It with trace  Medium	Moist Dark Coarse Coarse	Soft Damp	Dry  Olive  (C)  Gravel  Gravel	edium Stiff  Circle major Gray  Circle major Sand  Sand	& underlin Brown & underlin Silt Silt Oil Sheen:	e modif Black e modif	ying) Ying) Clay Clay BP2	Other	
Sand / Gra  Silt / C  Moisture Very Wet  Color Light  Major Constituer Fine  Minor Constituer Fine  Biological:	Wet  Medium  Medium  It with trace  Medium	Moist Dark Coarse Coarse	Soft Damp	Dry  Olive  (C)  Gravel  Gravel	edium Stiff  Circle major Gray  Circle major Sand  Sand	& underlin Brown & underlin Silt Silt Oil Sheen:	e modifi Black e modifi Nor W Proj.	ying) Clay Clay BP2	Other Trace (<5%)	



40,	LITATIVE SA	AMPLE CHAR	ACTERISTI	CS	P	age of
Coordinate Datum		Date (mm/dd/yy)	Project Lo	ocation	Sample Identif Number	
A State Plane, N Zone, NAD 83, Surve	y Ft	2-25-15	Boeing PL2	5	D-PCM_ 027	15
Coor	Sinates		Water D	Depth	T	Time
North		East	Depth	Unit Rep	Gear	3000000
196555	127476	8	24.8	f t \	0.2 Grab	949
8 cm 631 clau	ather E &	Surficial V Contact Po	Vood Estimate oints		X 5 =	%
urficial sediment characteristics:  Biological:%	Debris:	<u> </u>	Oil Sheen:	None	Trace (<5%)	%
Moisture Very Wet Wet Moi	st Damp	Dry (Circle ma	ijor & underline	e modifying		
Light Medium Dar	k	Olive Gray	Brown	Black	Other	
Major Constituent Fine Medium Cos	irse	(Circle ma Gravel San	olor & underline	e modifying Clay		
Minor Constituent with trace Fine Medium Coa	irse	Gravel San	Sit Sit	Cla	,	
ubsurface sediment characteristics:						
Density / Consistency Sand / Gravel - Very Loos		Medium D		ense	Very Dense	Hard
Sand / Gravel - Very Loos Silt / Clay - Very Soft  Moisture Very Wet Wet Moi	Soft	Medium Si	tiff St	iff	Very Stiff	Hard
Density / Consistency  Sand / Gravel - Very Loos  Silt / Clay - Very Soft  Moisture	Soft Damp	Medium Si		iff	Very Stiff	Hard
Sand / Gravel - Very Loos  Silt / Clay - Very Soft  Moisture Very Wet Wet Mo  Color Light Medium Dar  Major Constituent	Soft Damp	Medium Si  Dry  (Circle material Colline Gray)	ajor & underlin	e modifying Black	Very Stiff  Other	Hard
Sand / Gravel - Very Loos  Silt / Clay - Very Soft  Moisture Very Wet Wet Moi  Color Light Medium Dar  Major Constituent Fine Medium Cost  Minor Constituent with trace Fine Medium Cost	Soft  Soft  Samp	Dry  (Circle max Olive Gray  (Circle max Gravel Sar  Gravel Sar	ajor & underting Brown Silt	e modifying Black e modifying Cla	Very Stiff  Other	
Sand / Gravel - Very Loos  Silt / Clay - Very Soft  Moisture Very Wet Wet Moi  Color Light Medium Dar  Major Constituent Fine Medium Cost  Minor Constituent with trace Fine Medium Cost	Soft Damp	Dry  (Circle material College Grayer)  (Circle material College Grayer)  (Circle material College Grayer)	ajor & underling alor & underling Silt od Silt Oil Sheen:	e modifying Black e modifying Cla	Very Stiff  Other  Trace (<5%)	
Sand / Gravel - Very Loos  Silt / Clay - Very Soft  Moisture Very Wet Wet Moi  Color Light Medium Dar  Major Constituent Fine Medium Cos  Minor Constituent with trace Fine Medium Cos  Biological: %	Soft  Soft  Samp	Dry  (Circle max Olive Gray  (Circle max Gravel Sar  Gravel Sar	ajor & underling Brown Silt Oil Sheen:	e modifying Black e modifying Cla	Very Stiff  Other  Trace (<5%)	
Sand / Gravel - Very Loos  Silt / Clay - Very Soft  Moisture Very Wet Wet Moi  Color Light Medium Dar  Major Constituent Fine Medium Cost  Minor Constituent with trace Fine Medium Cost	Soft  Soft  Samp	Dry  (Circle max Olive Gray  (Circle max Gravel Sar  Gravel Sar	ajor & underling Silt Silt Oil Sheen:	e modifying Black e modifying Cla Cla	Very Stiff  Other  Trace (<5%)	
Sand / Gravel - Very Loos  Silt / Clay - Very Soft  Moisture Very Wet Wet Moi  Color Light Medium Dar  Major Constituent Fine Medium Cost  Minor Constituent with trace Fine Medium Cost	Soft  Soft  Samp	Dry  (Circle max Olive Gray  (Circle max Gravel Sar  Gravel Sar	ajor & underling Brown Silt Oil Sheen:	e modifying Black e modifying Cla Cla	Very Stiff  Other  Trace (<5%)	9



	LITATIVE SAI	WIFLE CHA	RACI	ERISTI	CS		1	Page of
Coordinate Datum		Date (mm/dd/yy)		Project Lo	cation		Sample Identi Numbe	r
A State Plane, N Zone, NAD 83, Survey	Ft	2-24-15	Boo	ing PL2		S	D-PCM_029	15
Coordi	nates			Water D	epth			Time
North		East		Depth	Unit	Rep	Gear	800000
196096	127529			13.9	ft	1	0.2 Grab	1444
Penetration Depth Unit Initials S S Wea 3 c m 6540 V 405	_	Surficia Contact		Estimate:			X 5 =	9
Biological:%	Debris: O	%	Oil	Sheen:	No	ne)	Trace (<5%)	
Moisture Very Wet Wet Moist	t Damp	Dry						
Color Light Medium Dark		Olive Gray		underline wn	Black		Other	
Major Constituent Fine Medium Coan	se		major & and	underline Silt	modi	fying) Clay		
Minor Constituent with trace Fine Medium Coan	se	Gravel (S	and	Silt		Clay	trace	rouge gra
Density / Consistency								
Sand / Gravel - Very Loose		Medium		333	ense		Very Dense	
Sand / Gravel - Very Loose Silt / Clay - Very Soft	Loose	Medium		De St			Very Dense Very Stiff	Hard
Sand / Gravel - Very Loose	Soft			333				Hard
Sand / Gravel - Very Loose Silt / Clay - Very Soft  Moisture	Soft	Medium	Stiff major &	333	ff		Very Stiff	Hard
Sand / Gravel - Very Loose Silt / Clay - Very Soft  Moisture Very Wet Wet Mois  Color	Soft	Dry (Circle of Circle (Circle of Circle of Cir	Stiff major &	St	iff e modi Black		Very Stiff Other	Hard
Sand / Gravel - Very Loose Silt / Clay - Very Soft  Moisture Very Wet Wet Mois  Color Light Medium Dark  Major Constituent	Soft Damp	Dry (Circle of Circle of C	Stiff major & Bro	underline wn	iff e modi Black	ifying	Very Stiff Other	Hard
Sand / Gravel - Very Loose Silt / Clay - Very Soft  Moisture Very Wet Wet Mois  Color Light Medium Dark  Major Constituent Fine Medium Coar  Minor Constituent with trace	Soft Damp	Dry (Circle of Circle of C	Stiff major & Bro	underline wn underline Silt	e modi Black e modi	ifying Clay	Very Stiff Other	
Sand / Gravel - Very Loose Silt / Clay - Very Soft  Moisture Very Wet Wet Mois  Color Light Medium Dark  Major Constituent Fine Medium Coar  Minor Constituent with trace Fine Medium Coar	Soft Damp	Dry (Circle of Gravel of Stavel of S	Stiff major & Bro	underline own underline Silt	e modi Black e modi	Clay	Very Stiff Other	
Sand / Gravel - Very Loose  Silt / Clay - Very Soft  Moisture Very Wet Wet Mois  Color Light Medium Dark  Major Constituent Fine Medium Coar  Minor Constituent with trace Fine Medium Coar  Biological: %	Soft Damp	Dry (Circle of Gravel of Stavel of S	major & Brown and Sand Amer	underline own underline Silt	e modi Black e modi	Clay Clay one	Other	



QUA	LITATIVE SA	MPLE CHARA	ACTERISTICS	Pi	age of
Coordinate Datum		Date (mm/dd/yy)	Project Location	Sample Identifi Number	cation
WA State Plane, N Zone, NAD 83, Survey	Ft	2-24-15	Boeing PL2 - 0-2-9	SD-PCM 050	15
Coord	nates		Water Depth		Time
North	I	East	Depth Unit F	Rep Gear	
195 923	127549	0	19.5 1 1	2 0.2 Grab	1300
Penetration 8		Surficial W	lood Estimate:		
Penetration  Depth Unit Initials & Wes	ther Section (%)	Contact Po			
18 6 m 63 m 5 mm		Contact Fo		X 5 =	%
Surficial sediment characteristics:				000000000000000000000000000000000000000	
Biological: 9 %	Debris:	0 %	Oil Sheen: Non	race (<5%)	0_%
Moisture Very Wet Wet Mois	t Damp	Dry			
Color Light Medium Dark		(Circle maj Olive Gray	jor & underline modify Brown Black	ring) Other	
Major Constituent Fine Medium Coar	se	(Circle maj Gravel Sand	jor & underline modify	ving) Clay	
Minor-Constituent with trace Fine Medium Coar	se	Gravel Sand	d Silt	Clay	
Density / Consistency  Sand / Gravel - Very Loose  Silt / Clay - Very Soft	Loose	Medium De		Very Dense Very Stiff	Hard
Moisture Very Wet Wet Mois Color		Dry	jor & underline modif	· · · · · · · · · · · · · · · · · · ·	71010
Light Medium Dark	i.	Olive Gray	Brown Black	Other	
Major Constituent Fine Medium Coa	rse	(Circle ma Gravel San	jor & underline modif d Silt	ying) Clay	
Minor Constituent with trace Fine Medium Coa Biological:%	Debris:	Gravel San	Oil Sheen: Nor	Clay	9
Comments: 8 1 - 2010	He - 4	Action	AmecFW Proj. BP	2 PCM	
			SD-PCM02915   QSC Form	nitials: S	$\equiv$
			Date: 2 / 21+/2	015 Time: 13 0	0 =



Station SD-PCM029

				QUAL	ITATIVE	SAMPLE	CHARA	CTERIS	rics		F	page of
		Coord	dinate	e Datum			Date n/dd/yy)	Project	Location	ı.	Sample Identif	
VA State	Plane, I	N Zone,	NAD	83, Survey F	1	2.25	-15	Boeing PL	2	SI	D-PCM_ 930	15
				Coordin	nates			Water	Depth			Time
		North				East		Depth		Rep	Gear	
10	157	48			1275	656		25.6	ft	1	0.2 Grab	1024
Penetra Depth	Unit c m	Initials	П	Weat (	her LS		Surficial W Contact Po	ood Estimat ints	le:	_	X5 =	%
Biolog Moistu	gical: _	0	7	%	Debris: _	0	%	Oil Sheen	: (Ne	one	Trace (<5%)	%
Color Ligi	Constit	Mediu tuent Mediu		Moist Dark Coars	Dam	Olive	(Circle maj ) Gray	Brown or & underli	Black		Other	
Fin Subsurfa	e ce sedi	Mediument ch	um arac	Coars	e	Gravel	Sang	Sitt		Clay		
	Sand /	Gravel -		Very Loose	Loos	se	Medium De	nse	Dense		Very Dense	
	Sil	t / Clay	. /	Very Soft	Soft	8	Medium Sti	ff	Stiff		Very Stiff	Hard
Color Lig Major	ry Wet ht Consti	Medic		Moist Dark		Olive	(Circle ma Gray (Circle ma	or & underl	Black	lifying	Other	
Fin		Media	-	Coars	e	Gravel	San	Sit Sit		Clay	70	
Fin	ie	Medit		Coars		Gravel				Clay		
Comm	nents:	n n	C.	% s:// a	Debris: _	ic q	%	Oil Sheen		one 2	Trace (<5%)	
								QSC F	M0301	5 Ini	PCM - tials: <u>63 ₹</u> \ 15 Time: <u>10 1</u>	<u>-</u>



Station SD-PCM030

Weather Weathe	Surficial We Contact Poi	ood Estimate: ints  Oil Sheen:	oth Jnit Rep t		%
Weather Section Sectio	Surficial Wo Contact Poi	Water Des Depth L Of State of & underline m	None	Gear 0:2 Grab  f (22 m)  X 5 =  Trace (<5%)	Time 1320
Weather E S  Weather E S  Weather E S  Moist Damp  Dark	Surficial We Contact Poi	Depth U of food Estimate: ints  Oil Sheen:	None None	0:2-Grab  * (***)  X 5 =  Trace (<5%)	1320
Weather E S  Weather E S  Weather E S  Moist Damp  Dark	Surficial We Contact Poi	Depth U of food Estimate: ints  Oil Sheen:	None None	0:2-Grab  * (***)  X 5 =  Trace (<5%)	1320
Weather ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	Surficial We Contact Poi	ood Estimate: ints  Oil Sheen:	None None	0:2-Grab  * (***)  X 5 =  Trace (<5%)	%
stics:  Moist Damp  Dark	Contact Poi	Oil Sheen:	nodifying)	X 5 =	
stics:  Moist Damp  Dark	Contact Poi	Oil Sheen:	nodifying)	Trace (<5%)	
Moist Damp	Dry (Circle majo Olive Gray	or & underline m	nodifying)		%
Moist Damp Dark	Dry (Circle majo Olive Gray	or & underline m	nodifying)		%
Dark	(Circle majo Olive Gray				
	Olive Gray				
Coarse	(Circle majo			Other	
	Gravel Sand	or & underline m	nodifying) Clay		
Coarse	Gravel Sand	Silt	Clay		
Very Loose Loose	Medium Den	nse Dens	e	Very Dense	
Very Soft Soft	Medium Stiff	Stiff		Very Stiff	Hard
Moist Damp	Dry				
Dark				Other	
Coarse	(Circle majo Gravel Sand	or & underline m	nodifying) Clay		
Coarse •	Gravel Sand	Silt	Clay		
% Debris:\	0%	Oil Sheen: (	None	Trace (<5%)	%
-m 675 as gave	132				
		- SD-PCM03	roj. BP2	PCM	=
		QSC Form	. 10 Initi	lais: 0315	_
			/2015	5 Time:	. <u> </u>
	Coarse  Very Loose Loose Very Soft Soft  Moist Damp  Dark  Coarse  Coarse  Medical Coarse  Coarse  Coarse  Medical Coarse  Coarse  Coarse  Coarse  Coarse	Coarse Gravel Sand  teristics:  Very Loose Loose Medium Der  Very Soft Soft Medium Stiff  Moist Damp Dry  (Circle major Olive Gray  (Circle major Coarse Gravel Sand  Ce Coarse Gravel Sand  Medium Stiff  Medium Stiff  And Coarse Gravel Sand  Coarse Gravel Sand  Ce Coarse Gravel Sand	Coarse Gravel Sand Silt  Very Loose Loose Medium Dense Dens  Very Soft Soft Medium Stiff Stiff  Moist Damp Dry  (Circle major & underline modern and the second Silt Sand Silt Silt Stiff Stiff Stiff Coarse Gravel Sand Silt Silt Sheen:  (Coarse Gravel Sand Sheen:	Coarse Gravel Sand Silt Clay  teristics:  Very Loose Loose Medium Dense Dense  Very Soft Soft Medium Stiff Stiff  Moist Damp Dry  (Circle major & underline modifying)  Dark Olive Gray Brown Black  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  toe Coarse Gravel Sand Silt Clay  Medium Stiff Stiff  Moist Damp Dry  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Dense Dense  (Circle major & underline modifying)  Amedium Stiff Stiff  Moist Damp Dry  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Dense Dense  (Circle major & underline modifying)  Amedium Stiff Stiff  Moist Damp Dry  (Circle major & underline modifying)  Amedium Stiff Stiff  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Stiff Stiff  Amedium Stiff Stiff  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Amedium Stiff Stiff  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Amedium Stiff Stiff  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Amedium Stiff Stiff  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Amedium Stiff Stiff  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Amedium Stiff Stiff  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Amedium Stiff Stiff  Coarse Gravel Sand Silt Clay  Coarse Gravel Sand Silt Clay  Amedium Stiff Stiff  Coarse Gravel Sand Silt Clay  Coarse G	Coarse Gravel Sand Silt Clay  Very Loose Loose Medium Dense Dense Very Dense  Very Soft Soft Medium Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  Dark Olive Gray Brown Black Other  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Stiff Stiff Very Stiff  Medium Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Dense Very Dense  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Stiff Stiff Very Stiff  Medium Stiff Stiff Very Stiff  Medium Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Stiff Stiff Very Stiff  Medium Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Stiff Stiff Very Stiff  Medium Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  Coarse Gravel Sand Silt Clay  Medium Stiff Stiff Very Stiff  Medium Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  American Stiff Stiff Very Stiff  Moist Damp Dry  (Circle major & underline modifying)  American Stiff Stif



Station SD-PCM031

		50,500.00		13110.35050			CTERIS	2000 HO				Page of _
	Coordin	nate Datum				ate (dd/yy)	Projec	t Loca	ation		Sample Ident Numbe	
A State Plane,	N Zone, N	AD 83, Surve	y Ft		2-15	-15	Boeing Pt	2		SE	-PCM_ 32	15
		Coor	dinates				Wate	er Dep	oth			Time
	North				East		Dept	h L	Jnit	Rep	Gear	
1982	.72		,	27 31	56		0	f	t	1	0.2 Grab	1300
Penetration Depth Unit	Initials 2	We We	ather	Fines (%)		urficial Wo		ite:			sboon	
c m	GS A		ox dy		- 00	ntact Pol	nts	_		_	X 5 =	
urficial sedime					ves ,	۱ مر		3	_			
Biological:	0	%	Debris:		-	%	Oil Sheer	r: (	No	De)	Trace (<5%)	
Moisture Very Wet	Wet	) Moi	st [	Damp	Dry							
Color Light	Medium	> Dar	k		(C Olive	ircle majo Gray (	r & under Brown		nodif lack	ying)	Other	ange
Major Consti	ituent Medium	Coa	irse		(C Gravel	ircle majo Sand	r & under			ying) Clay	tel sesse	
Minor Const		The second second second	ırse		Gravel	Sand	Sill			Clay		
Fine bsurface sed Density / Cor					Ciuro	7077.78						
bsurface sed	iment char			.oose	ATOTION	edium Den	se	Dens	e		Very Dense	
Density / Con	iment char	acteristics:	e L	.oose	Ме		10	Dens Stiff	e		Very Dense	Hard
Density / Con	iment char nsistency / Gravel -	acteristics: Very Loose	e L	2039	Ме	edium Den	10		e			Hard
Density / Con Sand / Si Moisture	iment char nsistency / Gravel - lt / Clay -	Very Loose Very Soft Moi	e L	Soft	Me Me	edium Den		Stiff		ying)		1 1 1 1 1 1 1
Density / Con Sand / Si Moisture Very Wel	iment char nsistency / Gravel - It / Clay - Wet	Very Loose  Very Soft  Moi	e L	Soft	Me Me Dry (C Olive	edium Den edium Stiff ircle majo	r & under Brown	Stiff	nodit		Very Stiff	1 1 1 1 1 1 1
Density / Con Sand / Si Moisture Very Wel Color Light Major Consti	iment char nsistency / Gravel - It / Clay - Wet Medium ituent Medium	Very Loose Very Soft  Moi  Dar  Coa	e L sst [	Soft	Dry (C Olive (C Gravel	edium Den edium Stiff ircle majo Gray ircle majo Sand	r & under Brown or & under	Stiff	nodif	ying) Clay	Very Stiff	1 1 1 1 1 1 1
Density / Con Sand / Si Moisture Very Wel Color Light Major Consti Fine	iment char nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loose Very Soft  Moi  Dar  Coa	e L S sst ( k urse	Soft	Dry (C Olive (C	edium Den edium Stiff ircle majo Gray ircle majo Sand	r & under Brown r & under Sill	Stiff	nodif	ying) Clay Clay	Very Stiff Other	
Density / Constitute Very Well  Color Light  Major Constitute Fine  Biological:	iment char nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loose Very Soft  Moi  Dar  Coa	st [	Soft	Dry (C Olive (C Gravel	edium Den edium Stiff ircle majo Gray ircle majo Sand	r & under Brown or & under	Stiff	nodif	ying) Clay Clay	Very Stiff	
Density / Con Sand / Si Moisture Very Wel Color Light Major Consti Fine Minor Consti	iment char nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loose Very Soft  Moi  Dar  Coa  trace  Coa	st [	Soft	Dry (C Olive (C Gravel	edium Den edium Stiff ircle majo Gray ircle majo Sand	r & under Brown r & under Sill Sill	Stiff	nodif	ying) Clay Clay	Other	
bsurface sed Density / Cor Sand / Si Moisture Very Wel Color Light Major Consti Fine Minor Consti	iment char nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loose Very Soft  Moi  Dar  Coa  trace  Coa	st [	Soft	Dry (C Olive (C Gravel	edium Den edium Stiff ircle majo Gray ircle majo Sand	r & under Brown r & under Sill Sill	Stiff	nodif	ying) Clay Clay	Other	
Density / Constitute Very Well Color Light Major Constitute Fine Minor Constitute Fine Biological:	iment char nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loose Very Soft  Moi  Dar  Coa  trace  Coa	st [	Soft	Dry (C Olive (C Gravel	edium Den edium Stiff ircle majo Gray ircle majo Sand	r & under Brown r & under Sill Sill	line m	No PCFV	ying) Clay Clay	Other	
Density / Constitute Very Well  Color Light  Major Constitute Fine  Biological:	iment char nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loose Very Soft  Moi  Dar  Coa  trace  Coa	st [	Soft	Dry (C Olive (C Gravel	edium Den edium Stiff ircle majo Gray ircle majo Sand	or & under Brown or & under Sill Sill	line m	No PCFV	V Pro	Other Trace (<5%)  Li 2 F ( M	
Density / Constitute Very Well  Color Light  Major Constitute Fine  Biological:	iment char nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loose Very Soft  Moi  Dar  Coa  trace  Coa	st [	Soft	Dry (C Olive (C Gravel	edium Den edium Stiff ircle majo Gray ircle majo Sand	or & under Brown or & under Sill Sill	line m	No PCFV	V Pro	Other	



Station SD-PCM032

	2	QUAL	IIAIIVE SA	MPLE CHAR	ACT	ERISTI	cs		F	age of
	Coordina	ate Datum		Date (mm/dd/yy)	3	Project Lo	ocation	T	Sample Identif Number	
A State Plane,	N Zone, NAI	3 83, Survey F	t	3-12-15	Boe	ing PL2		St	D-РСМ_33	15
		Coordin	ates			Water D	Depth			Time
	North			East		Depth	Unit	Rep	Gear	
19799	1		127 32	98		٥	ft	1	0:2 Grab	1345
Penetration Depth Unit c m	Initials Soliting	Weath		Surficial V		Estimate:	0	_	Σξ::·  X5 =	
urficial sedime	ent character		Debris:	°%	Oil	Sheen:	Nor	10	Trace (<5%)	
Moisture Very Wet	Wet	Moial	, Damp	Dry						
Color Light	Medium.	Dark		Olive Gray	Bro		Black	ying)	Other	
Major Const	ituent Medium	Coarse		(Circle ma Gravel (Sar		underline Silt	Control of the Contro	ying) Clay		
Minor Const Fine	ituent with to Medium	race Coarse	•	Gravel Sar	nd	Silt		Clay	9-	
Density / Co		cteristics:								
	ACCUMANT.									
	/ Gravel -	Very Loose	Loose	Medium D	lense	De	ense		Very Dense	
Si	ilt / Clay -	Very Loose Very Soft	Loose	Medium D	5.000	De			Very Dense Very Stiff	Hard
Si Moisture Very Wet	ilt / Clay -			52500 m.s	5.000				- W. 192	Hard
Moisture	ilt / Clay -	Very Soft	Soft	Medium S	ajor &	Sti	ff .	ying)	Very Stiff	Hard
Moisture Very Wet	Wet Medium	Very Soft  Moist	Soft	Medium S Dry (Circle ma	ajor & Bro	Sti underline	e modif Black		Very Stiff Other	Hard
Moisture Very Wet Color Light Major Const	Wet  Medium  ituent  Medium	MoisD Dark Coarse	Soft	Dry  (Circle m. Olive Gray)	ajor & Bro ajor &	underline wn underline	e modif Black e modif	ying)	Very Stiff Other	Hard
Moisture Very Wet Color Light Major Consti Fine	Wet  Medium  ituent Medium	Very Soft  Moist  Dark  Coarse	Soft	Dry  (Circle m. Olive Gray  (Circle m. Gravel Sar	ajor & Bro	underline wn underline Silt	e modif Black e modif	ying) Clay Clay	Very Stiff Other	Hard
Moisture Very Wet  Color Light  Major Consti Fine  Minor Const	Wet  Medium  ituent Medium	Very Soft  MoisD  Dark  Coarse	Soft Damp	Dry  (Circle m. Olive Gray  (Circle m. Gravel Sar  %	ajor & Bro	underline wn underline Silt Silt Sheen:	e modifi Black e modifi	ying) Clay Clay	Very Stiff Other	
Moisture Very Wet  Color Light  Major Consti Fine  Minor Const  Fine  Biological:	Wet  Medium  ituent Medium	Very Soft  MoisD  Dark  Coarse	Soft Damp	Dry  (Circle m. Olive Gray  (Circle m. Gravel Sar  %	ajor & Bro	underline wn underline Silt Silt Sheen:	e modifi Black e modifi	ying) Clay Clay	Other	
Moisture Very Wet  Color Light  Major Consti Fine  Minor Const Fine  Biological:	Wet  Medium  ituent Medium	Very Soft  MoisD  Dark  Coarse	Soft Damp	Dry  (Circle m. Olive Gray  (Circle m. Gravel Sar  %	ajor & Bro	underline wn underline Silt Silt Sheen:	e modifi Black e modifi	ying) Clay Clay	Other Trace (<5%)	
Moisture Very Wet  Color Light  Major Consti Fine  Minor Const Fine  Biological:	Wet  Medium  ituent Medium	Very Soft  MoisD  Dark  Coarse	Soft Damp	Dry  (Circle m. Olive Gray  (Circle m. Gravel Sar  %	ajor & Bro	underline wn underline Silt Silt Sheen:	e modifi Black e modifi FW Pro	ying) Clay Clay	Other	



		QUAL	LITATIVE S.	AMPLE C	IIAIAO	TERISTI	CS		P	age of
	Coordina	ate Datum		Dat (mm/de		Project Location			Sample Identification Number	
VA State Plane, N	Zone, NA	D 83, Survey I	Ft	3-12-	15 B	Boeing PL2		St	-PCM_34	15
		Coordin	nates			Water D	Depth			Time
	North			East		Depth	Unit	Rep	Gear	
14644	۵		127519	39		0	ft	1	0-2-Grab	1544
Penetration	Initials of	×	Surficial Wood Estimate:			26000				
Depth Unit				Con	tact Point	s			9.721	
NAME OF WARDS ASSOCIATION OF STREET	650	1 6 5/30	2-,			_		_	X5 = .	9
Surficial sedimer	nt characte			9	max s	20021-0000				
Biological: _		%	Debris:		_% 0	Oil Sheen:	No	ne <sub>5</sub>	Trace (<5%)	
Moisture Very Wet	Wet	Moist	Damp	Dry						
Color		00-		(Cir	cle major	& underline	e modi	fying)		
Light	Medium	Dark		Olive C	Gray E	Brown	Black		Other	
Major Constit	uent			(Cir	cle major	& underline	modi	fying)		
Fine	Medium	Coars	e	Gravel	Sand			07-		
Minor Constit	uent with t	race								
Fine	Medium	Coars	e	Gravel	Sand	Silt		Clay		
		cteristics:								
Density / Con		cteristics:	Loose	Med	fium Dense	e De	ense	-	Very Dense	
Density / Con	sistency		Loose Soft		tium Dense	e De			Very Dense Very Stiff	Hard
Density / Con Sand /	sistency Gravel -	Very Loose								Hard
Density / Con	sistency Gravel -	Very Loose						•		Hard
Density / Con Sand / Silt Moisture Very Wet	Gravel -	Very Loose Very Soft	Soft	Med	dium Stiff	Sti	ıff			Hard
Density / Con Sand / Silt Moisture	Gravel -	Very Loose Very Soft	Soft	Med Dry (Cir	dium Stiff		ıff	fying)		Hard
Sand / Silt  Moisture Very Wet  Color Light	Gravel -  // Clay -  Wet  Medium	Very Loose Very Soft Moist	Soft	Dry (Cir.	dium Stiff	Sti & underline Brown	e modi Black	fying)	Very Stiff	Hard
Density / Con Sand / Silt Moisture Very Wet	Gravel -  // Clay -  Wet  Medium	Very Loose Very Soft Moist	Soft	Dry (Cir.	dium Stiff	Sti & underline	e modi Black	fying)	Very Stiff	Hard
Sand / Silt  Moisture Very Wet  Color Light  Major Constit	Gravel -  // Clay -  Wet  Medium  went  Medium	Very Loose Very Soft  Moist  Dark  Coars	Soft	Dry (Cir.	cle major Gray	& underline Brown & underline	e modi Black	fying)	Very Stiff	Hard
Sand / Silt Moisture Very Wet  Color Light Major Constit	Gravel -  // Clay -  Wet  Medium  went  Medium	Very Loose Very Soft  Moist  Dark  Coars	Soft Damp	Dry (Cir.	cle major Gray	& underline Brown & underline	e modi Black	fying)	Very Stiff	Hard
Moisture Very Wet  Color Light  Major Constit Fine	Gravel -  // Clay -  Wet  Medium  uent  Medium  uent with t	Very Loose Very Soft  Moist  Dark  Coars	Soft Damp	Dry (Cir. Olive (Cir. Gravel	cle major Gray (Sand	& underline Brown & underline Salt	e modi Black e modi	fying) fying) Clay	Very Stiff	Hard
Moisture Very Wet  Color Light  Major Constit Fine  Biological:	Medium  Medium  Medium  Medium  Medium  Medium	Very Loose Very Soft  Moist  Dark  Coars	Soft  Damp  se  Debris:	Dry (Cir. Olive (Cir. Gravel	cle major Gray (cle major Sand Sand	& underline Brown & underline Salt	e modi Black e modi	fying) fying) Clay Clay	Very Stiff Other	
Moisture Very Wet  Color Light  Major Constit Fine	Medium  Medium  Medium  Medium  Medium  Medium	Very Loose Very Soft  Moist  Dark  Coars	Soft  Damp  se  Debris:	Dry (Cirr Olive (Cirr Gravel	cle major Gray (cle major Sand Sand	& underline Srown & underline Silt Silt Oil Sheen:	e modi Black e modi	fying) fying) Clay Clay	Very Stiff Other	
Moisture Very Wet  Color Light  Major Constit Fine  Minor Constit Fine  Biological:	Medium  Medium  Medium  Medium  Medium  Medium	Very Loose Very Soft  Moist  Dark  Coars	Soft  Damp  se  Debris:	Dry (Cirr Olive (Cirr Gravel	cle major Gray (cle major Sand Sand	& underline Srown & underline Silt Silt	e modi Black e modi	fying) Clay Clay	Other	
Moisture Very Wet  Color Light  Major Constit Fine  Minor Constit Fine  Biological:	Medium  Medium  Medium  Medium  Medium  Medium	Very Loose Very Soft  Moist  Dark  Coars	Soft  Damp  se  Debris:	Dry (Cirr Olive (Cirr Gravel	cle major Gray (cle major Sand Sand	& underline Brown & underline Silt Silt Oil Sheen:	mecFV	fying) Clay Clay N Pro	Other	
Moisture Very Wet  Color Light  Major Constit Fine  Biological:	Medium  Medium  Medium  Medium  Medium  Medium	Very Loose Very Soft  Moist  Dark  Coars	Soft  Damp  se  Debris:	Dry (Cirr Olive (Cirr Gravel	cle major Gray (cle major Sand Sand	& underline Brown  & underline Silt  Silt  Oil Sheen:	e modi Black e modi	fying) Clay Clay N Pro M034 orm	Other	



Station SD-PCM034

	QUALITATIVE S	AMPLE CHARA	CTERISTICS	Pa	ge of
Coordin	ate Datum	Date (mm/dd/yy)	Project Location	Sample Identific Number	cation
VA State Plane, N Zone, NA	D 83, Survey Ft	3-12- 15	Boeing PL2	SD-PCM 35	15
	Coordinates		Water Depth	T	Time
19 324 North		East	Depth Unit Rep	Gear	177750
146355	12753	lo	9 f t )	0-2-Grab	1235
Penetration 8		Surficial W	ood Estimate:	Spann	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Depth Unit Initials	Weather (%)	Contact Poi			
10 cm 2347	p structure	00111001101		X5 =	9
Surficial sediment characte		.3 <1 %	Oil Sheen: None	Trace (<5%)	
Moisture Very Wet Wet	Moist Damp	Dry			
Color Light Medium	Dark	Olive Gray	or & underline modifying Brown Black	Other	
Major Constituent Fine Medium	Coarse	(Circle majo Gravel Sand	or & underline modifying Silt Cla		
Minor Constituent with t	Coarse	Gravel Sand	Silt Cla	у	50 - 5475
ubsurface sediment chara Density / Consistency	cteristics:				
Sand / Gravel -	Very Loose Loose	Medium Der	Se Dense	Very Dense	
Silt / Clay -	Very Soft Soft	Medium Stiff	Stiff	Very Stiff	Hard
Moisture Very Wet Wet	Moist Damp	Dry			
Color Light Medium	Dark	(Circle majo	or & underline modifying Brown Black	g) Other	
Major Constituent Fine Medium	Coarse	(Circle majo Gravel Sand	or & underline modifying Silt Cla		
Minor Constituent with t	race Coarse	Gravel Sand	Silt Cla	у	
Biological:	% Debris: ****	Ating 10 %	Oil Sheen: None	Trace (<5%)	9
Comments:		9			
			mecFW Proj. BP2 PC		$\equiv$
		Q	D-PCM03515 Initials SC Form ate:/2015		$\equiv$



Station SD-PCM035

		QU	ALITA	ATIVE S	AMPLE	CHARA	CTERIST	ics		,	Page of _
	Coordin	ate Datum				Date n/dd/yy)	Project Location		T	Sample Identification Number	
A State Plane,	N Zone, NA	D 83, Surv	ey Ft		3-1	2-15			PCM_36	15	
		Coo	rdinates				Water Depth				Time
	North				East Depth Unit Rep			Gear	100000		
1959	21			12750	35		9	ft	1	0:2:Grab	1519
Penetration	19	3 _		T	s	orficial Wo	od Estimate			spoon	
Depth Unit	Initials 2	W W	eather	Fines (%)	Contact Points						
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urficial sedime	ent charact	eristics:	1								
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Biological:		76	Det	oris:	100	76	Oil Sheen:	No	ne	Trace (<5%)	
Moisture	14/-1			D							
Very Wet	Wet	(Mo	NST	Damp	Dry						
Color	4.11				7.2		r & underlin		fying)		
Light	Medium	> Da	rk		Olive	Gray	Brown	Black		Other	
Major Const		-					r & underlin	e modi	-		
Fine	Medium	Co	arse		Gravel	Sand	) Silt		Clay		
Minor Const					5251 W	_					
Fine  ibsurface sed		_	arse		Gravel	Sand	Silt		Clay		
bsurface sed	iment char	_		Loose		Sarid	20.7	ense	Clay	Very Dense	
Density / Co	iment char	acteristics:	se	Loose			se Do		Clay	Very Dense	Hard
Density / Co Sand	iment char nsistency / Gravel -	Very Loos	se			Medium Den	se Do		Clay		Hard
Density / Co	iment char nsistency / Gravel -	Very Loos Very Soft	se			Medium Den	se Do		Clay		Hard
Density / Co Sand Si Moisture	iment char nsistency / Gravel - It / Clay -	Very Loos Very Soft	se	Soft	M Dry	Medium Den	ise Di	iff		Very Stiff	Hard
Density / Co Sand Si Moisture Very Wet	iment char nsistency / Gravel - It / Clay -	Very Loos Very Soft	se	Soft	M Dry	Medium Den	se Do	iff		Very Stiff	Hard
Density / Co Sand Si Moisture Very Wet Color Light	iment char nsistency / Gravel - It / Clay - Wet	Very Loos Very Soft	se	Soft	Dry Olive	Medium Den Medium Stiff Circle majo Gray	se Do St or & underlin Brown	iff e modi Black	fying)	Very Stiff	Hard
Density / Co Sand Si Moisture Very Wet	iment char nsistency / Gravel - It / Clay - Wet	Very Loos Very Soft	se	Soft	Dry Olive	Medium Den Medium Stiff Circle majo Gray	se Do St or & underlin Brown or & underlin	iff e modi Black	fying)	Very Stiff	Hard
Density / Co Sand Si Moisture Very Wet Color Light Major Const	iment char- nsistency / Gravel - It / Clay - Wet Medium ituent Medium	Very Loos Very Soft  Da	se vist	Soft	Dry Olive	Medium Den Medium Stiff Circle majo Gray Circle majo	se Do St or & underlin Brown or & underlin	iff e modi Black	fying)	Very Stiff	Hard
Density / Co Sand Si Moisture Very Wet Color Light Major Const	iment char- nsistency / Gravel - It / Clay - Wet Medium ituent Medium	Very Loos Very Soft  Da  Co	se vist	Soft	Dry Olive	Medium Den Medium Stiff Circle majo Gray Circle majo	se Do St or & underlin Brown or & underlin	iff e modi Black	fying)	Very Stiff	Hard
Density / Co Sand Si Moisture Very Wet Color Light Major Const Fine	iment char- nsistency / Gravel - It / Clay - Wet  Medium ituent Medium	Very Loos Very Soft  Da  Co	se one	Soft	Dry Olive Gravel	Medium Den Medium Stiff Circle majo Gray Circle majo	se Do Silt Silt	e modi Black e modi	fying) fying) Clay Clay	Very Stiff Other	Hard
Density / Color Light Major Const Fine Minor Const Fine Biological:	iment char- nsistency / Gravel - It / Clay - Wet  Medium ituent Medium ituent with Medium	Very Loos Very Soft  Da  Co  trace	se one	Soft	Dry Olive Gravel	Medium Den Medium Stiff  Circle majo  Sand  Sand	se De Stor & underlin Brown or & underlin Silt Silt	e modi Black e modi	fying) Clay Clay	Very Stiff	
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Station SD-PCM036

	_
<b>ATTACHMENT</b>	R
ALIAOLIMENT	_

Chain-of-Custody Forms

3500 188th St. SW, Suite 601 Lynnwood,WA 98037 (425) 921-4000

## **CHAIN OF CUSTODY**

AmecFW Proj. BP2 PCM	1		alysis Contain	ers	
Post Construction Monitoring YR 2015 COC Number 001		SMS COCs-Full List (Metals, SVOAs, SIM, PCBs) and TOC (1-L Glass)	Grain size (PSEP) (16-oz Plastic)	Dioxin/Furans (8-oz Amber)	Recorded by:
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM01715 Initials:					
COC Form	Time:	\ \			\
Date: 2 / 21 /2015 Time: 913					
AmecFW Proj. BP2 PCM	Date:			-	Number of containers
SD-PCM00715 Initials: 65000		\			
COC Form	Time:	'	<b>)</b>	!	_
Date: 2 / <sup>21</sup> /2015 Time: 9 + 2					
AmecFW Proj. BP2 PCM	'Date:				Number of containers
SD-PCN 315 Initials: 65 V		1			,
COC Form SD-PCM02315	ime:	1			,
Date: 2 /27/2015 Time: 1016					
AmecFW Proj. BP2 PCM	ate:				Number of containers
SD-PCM22315 Initials: 6 5 Y		1	,		,
COC Form	ime:	,			)
Date: 2 /2 <sup>+</sup> /2015 Time: \^3 \alpha					
AmecFW Proj. BP2 PCM	ite:				Number of containers
SD-PCM00815 Initials: SSYS		1		,	<b>_</b>
COC Form	me:	1		- 1	_
Date: 2 /27 /2015 Time: 105)					
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM02415 Initials:		4			,
COC Form	Γime:	1			/
AmecFW Proj. BP2 PCM					
1. / .:	ate:			- "	Number of containers
SD-PCM01815 Initials:		1	1		_
COC Form	me:		1		2
Date: 2 / 2/1 /2015 Time: 32	<b>.</b>				
Laboratory Sample Receipt			uished By		Received By
ARI Project Manager—Kelly Bottem AMEC Project Manager—Cliff Whitmus (cliff whitmus@amecfw com ph		Name:	y Mux	\\  Name:	Chris Amuel
425-921-4023) AMEC Laboratory Coordinator—Crystal Neirby		Date:	y Muzu 24 -15	Date:	2-24-15-
(crystal neirby@amecfw.com_ph. 206-838-8469)	actorial in 1 liter	Timo:	4 -15	Time:	2-67-15

1600

must be thoroughly homogenized before analysis Dioxin (8-oz Amber) and GS (16-oz plastic) samples are homogenized.

3500 188th St. SW, Suite 601 Lynnwood,WA 98037 (425) 921-4000

Sediment samples in 1-L glass jars are unhomogenized Samples material in 1-liter jars must be thoroughly homogenized before analysis. Dioxin (8-oz Amber) and GS (16-oz plastic) samples are homogenized.

## **CHAIN OF CUSTODY**

	_	An	alysis Contain	ers	
AmecFW Proj. BP2 PCM  Post Construction Monitoring YR  2015  COC Number 002		SMS COCs-Full List (Metals, SVOAs, SIM, PCBs) and TOC (1-L Glass)	Grain size (PSEP) (16-oz Plastic)	Dioxin/Furans (8-oz Amber)	Recorded by: <u>と</u> が
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM21815 Initials:					
^	<u></u>	\			,
COC Form	Time:	,			<b>)</b>
Pate: 2 /27 /2015 Time: 1/4 / /					
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM02915 Initials: 55					
COC Form	Time:	\			
Date: $\frac{2}{\sqrt{24}/2015}$ Time: $\frac{13}{3}$		,			
Date//2015 Time:	₄Date:				Number of containers
AmecFW Proj. BP2 PCM	Duic.				Number of containers
SD-PCM02815 Initials: 6 5 V	•.	1			<b>A</b>
COC Form	Time:	Ι,			}
- Date: 2 /2 /2015 Time: 1 444					
I .	Date:			-	Number of containers
AmecFW Proj. BP2 PCM	ŀ	,			
SD-PCM01915 Initials: GSS	Time:	)		)	2
- agg Form					
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or Write ID Number Here	:				
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	. :				
	Date:				Number of containers
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or Write ID Number Here	Time:				
Place Sample ID Label Here	Date:				Number of containers
or Write ID Number Here	İ				
	Time:				
Laboratory Sample Receipt		Relino	uished By		Pageived By
ARI Project Manager—Kelly Bottem			y Marca	Name:	Chair Ahred
AMEC Project Manager—Cliff Whitmus (cliff.whitmus@amecfw.com)	ph	l l	J		L
425-921-4023) AMEC Laboratory Coordinator—Crystal Neirby (crystal.neirby@amecfw.com_oh, 206-838-8469)		Date: ح	24-15	Date:	24-15

Time:

1600

Admin\Field Forms\COC

Time:

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# **CHAIN OF CUSTODY**

	Time:				
or Write ID Number Here	Time				
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72010 Time.	Date:				Number of containers
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AmecFW Proj. BP2 PCM	Date:				Number of containers
Date: 2 /25 /2015 Time: _ ) = 2 +					
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SD-PCM03015 Initials: 65		<b>1</b>			
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Date: 2 /25 /2015 Time: 949					
COC Form	Time:	]			1
SD-PCM02715 Initials:					
AmecFW Proj. BP2 PCM	Date:	U O L O			Number of containers
	1	SMS (Metal	Grain size (PSEP) (16-oz Plastic)	Dioxin/Furans (8-oz Amber)	
COC Number 003	: :	COC ls, S\ ) and slass)	ı size z Ple	n/Fu Amt	Checked by:
2015		s-Ful VOAs 1 TOC	e (PS	rans ber)	Chapter L.
Post Construction Monitoring YR		SMS COCs-Full List (Metals, SVOAs, SIM, PCBs) and TOC (1-L Glass)	SEP)		Recorded by:
AmecFW Proj. BP2 PCM	]		alysis Contain	ers	
		Λ	alveie Cantaia	ore !	

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### Amec Foster Wheeler 3500 188th St. SW, Suite 601 Lynnwood,WA 98037

2274

# **CHAIN OF CUSTODY**

(425) 921-4000	- 1	Ans	alysis Containe	ers	
AmecFW Proj. BP2 PCM Post Construction Monitoring YR 2015		ist SIM,	Grain size (PSEP) (16-oz Plastic)		Recorded by:
L COC Number 004		SMS COCs-Full L (Metals, SVOAs, 9 PCBs) and TOC (1-L Glass)	erain siz 16-oz Pl	Dioxin/Furans (8-oz Amber)	
AmecFW Proj. BP2 PCM SD-PCM01615 Initials: S S S S S S S S S S S S S S S S S S S	)ate:	0,000	<u> </u>		Number of containers
	ime:	\			<b>,</b>
COC Form	Date: Time:	)			Number of containers
Ministra a cara a c	Date:				Number of containers
AmecFW Proj. BP2 PCM  SD-PCM20615 Initials:	me:	1	·		
Date:/ 10 /2015 Time: 6  AmecFW Proj. BP2 PCM	ate:		<del>-</del>		Number of containers
SD-PCM02615 Initials: <u>SSY</u>	ime:	)			
AmecFW Proj. BP2 PCM	late:				Number of containers
SD-PCM02215 Initials:	me.	)			,
Date: 3 / 9 /2015 Time: 11 / 5  AmecFW Proj. BP2 PCM  SD-PCM00515 Initials: 55	late:	)	١		Number of containers
COC Form	ate:				Number of containers
Date: 3 / 10 /2015 Time: 12 46 AmecFW Proj. BP2 PCM SD-PCM01415 Initials: 65 \( \) COC Form	<b>e</b> :	1	\		2
Date: 3 /10 /20			<u></u>	1	
Date: 3 /10 /2015 Time: 3 05  ARI Project Manager—Kelly Bottem  AMEC Project Manager—Cliff Whitmus (cliff.whitmus@amectw.com		Relin Name:	quished By	Name:	Received By
425-921-4023) AMEC Laboratory Coordinator—Crystal Neirby (crystal.neirby@amecfw.com_ph. 206-838-8469)		Date:	-10-15	Date:	× 3/10/15
Sediment samples in 1-L glass jars are unhomogenized. Samples ma must be thoroughly homogenized before analysis. Dioxin (8-oz Amber	terial in 1-liter jars r) and GS (16-oz	Time:	523	Time:	1503

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# **CHAIN OF CUSTODY**

AmecFW Proj. BP2 PCM	_	An	alysis Contain	ers	]
Post Construction Monitoring YR 2015 COC Number 005		SMS COCs-Full List (Metals, SVOAs, SIM, PCBs) and TOC (1-L Glass)	Grain size (PSEP) (16-oz Plastic)	Dioxin/Furans (8-oz Amber)	Recorded by:
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM00215 Initials: <u>SS</u> COC Form  Date: <u>J / S</u> /2015 Time: <u>SS</u>	Time:	١	1		2
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM01115 Initials: <u>6) \( \text{\text{M}} \) COC Form  Date: \( \frac{3}{2} \frac{1}{2} \)   2015 Time: \( \frac{13}{2} \frac{1}{4} \)</u>	Time:	<b>)</b>	١		2
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM01315 Initials: <u>≤ 5 ()</u> COC Form  Date: <u>3</u> / 2015 Time: 10 / 12	Time:	)			1
Place Sample ID Label Here	Date:				Number of containers
or Write ID Number Here	Time:				
Place Sample ID Label Here or Write ID Number Here	Date:				Number of containers
			<u> </u>		
Place Sample ID Label Here or Write ID Number Here	Date:				Number of containers
Place Sample ID Label Here or Write ID Number Here	Date:	· · · · · · · · · · · · · · · · ·			Number of containers
Laboratory Sample Receipt			quished By		Received By
ARI Project Manager—Kelly Bottem AMEC Project Manager—Cliff Whitmus (cliff.whitmus@amecfw.com ph		Name: 6	102 150	Name	
425-921-4023) AMEC Laboratory Coordinator—Crystal Neirby (crystal.neirby@amecfw.com_ph. 206-838-8469)		Date:	10-15	Date:	3/10/15
Sediment samples in 1-L glass jars are unhomogenized. Samples must be thoroughly homogenized before analysis. Dioxin (8-oz Amb plastic) samples are homogenized.		Time:	527	Time:	1504

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## **CHAIN OF CUSTODY**

AmecFW Proj. BP2 PCM	<b>.</b> i		alysis Containe	ers	
Post Construction Monitoring YR 2015 COC Number 006		SMS COCs-Full List (Metals, SVOAs, SIM, PCBs) and TOC (1-L Glass)	Grain size (PSEP) (16-oz Plastic)	Dioxin/Furans (8-oz Amber)	Recorded by:
AmecFW Proj. BP2 PCM	Date.				Number of containers
SD-PCM01515 Initials	Time	)	-	1	ح
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM00415 Initials: 55 M  COC Form  Date: 3 / 1 /2015 Time: 916	Time	-		1	5
AmecFW Proj. BP2 PCM	Date.				Number of containers
SD-PCM00315 Initials:	Time <sup>.</sup>	١			\
Date. <u> </u>	Date				Number of containers
AmecFW Proj. BP2 PCM					
SD-PCM01215 Initials: 65 M COC Form	Time:	)			1
— Date: 3 / 11 /2015 Time.	Date <sup>-</sup>				Number of containers
AmecFW Proj BP2 PCM	•				
SD-PCM21215 Initials: 63 5	me.	)			\
. COC Form					
Date: 3 /\ /2015 Time: \( \frac{3}{5} \) 6 AmecFW Proj. BP2 PCM	- ite				Number of containers
SD-PCM00115 Initials: 5 5 0	Time.	1		)	2
COC Form  Date: 3 / 1/2015 Time: 1009					
AmecFW Proj. BP2 PCM	<b>Date</b>				Number of containers
SD-PCM02115 Initials Sign		١,			1
COC Form	ſime <sup>,</sup>	,			'
Date: 3 / /2015 Time: 10 10 10 10 10 10 10 10 10 10 10 10 10					
		Reline Name:	quished By	, Name:	Received By :
ARI Project Manager—Kelly Bottem  AMEC Project Manager—Cliff Whitmus (cliff.whitmus@amecfw.com pt 425-921-4023)	1	Gent	, Marne		<u> </u>
AMEC Laboratory Coordinator—Crystal Neirby (crystal neirby@amecfw.com_ph_206-838-8469)		Date: 3	-11-15	Date	lulis
Sediment samples in 1-L glass jars are unhomogenized Samples in must be thoroughly homogenized before analysis Dioxin (8-oz Amt plastic) samples are homogenized		Time:	550	Time:	50

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### **CHAIN OF CUSTODY**

AmecFW Proj. BP2 PCM	_	An	alysis Contain	ers	
Post Construction Monitoring YR 2015 COC Number 007		SMS COCs-Full List (Metals, SVOAs, SIM, PCBs) and TOC (1-L Glass)	Grain size (PSEP) (16-oz Plastic)	Dioxin/Furans (8-oz Amber)	Recorded by GSV
AmecFW Proj. BP2 PCM	Date				Number of containers
SD-PCM02015 Initials.		,			
COC Form	Time	1			\
Date 3 / \\ /2015 Time: 21)					,
AmecFW Proj. BP2 PCM	Date				Number of containers
SD-PCM02515 Initials: 650					
. COC Form	Time	ì			\
Date: 7 /11 /2015 Time: 3					
AmecFW Proj. BP2 PCM	Date.			-	Number of containers
SD-PCM01015 Initials: SS					
	Time	1		1	2
COC Form  3 11/2015 Time: \( \frac{1}{3} \)					
Date:/2015 Time:	Date	<u> </u>			Number of containers
Place Sample ID Label Here or Write ID Number Here					
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	Time				
	Date <sup>-</sup>		-	18.2	Number of containers
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·					
<del></del>	Date <sup>.</sup>		<del></del>		Number of containers
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or Write ID Number Here	Time				
	<u> </u>		,		
Laboratory Sample Receipt  ARI Project Manager—Kelly Bottem		Relino Name:	uished By	, Name	Received By
AMI Project Manager—Reily Bottem  AMIC Project Manager—Cliff Whitmus (cliff whitmus@amecfw.com.pl  425-921-4023)	h	Cox	2 Maxw	· 1	

Date: | Date: | 3 | 11 | 5 |
Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | Time: | T

Sediment samples in 1-L glass jars are unhomogenized Samples material in 1-liter jars must be thoroughly homogenized before analysis Dioxin (8-oz Amber) and GS (16-oz plastic) samples are homogenized

AMEC Laboratory Coordinator—Crystal Neirby (crystal.neirby@amecfw.com\_ph\_206-838-8469)

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# **CHAIN OF CUSTODY**

	_		alysis Contain	ers	
Place Sample ID Label Here or Write ID Number Here		SMS COCs-Full List (Metals, SVOAs, SIM, PCBs) and TOC (1-L Glass)	Grain size (PSEP) (16-oz Plastic)	Dioxin/Furans (8-oz Amber)	Recorded by:
AmecFW Proj. BP2 PCM	Date:				Number of containers
SD-PCM03215 Initials:					
COC Form	Time:	\			1
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AmecFW Proj. BP2 PCM					reaginer of containers
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ARI Project Manager—Kelly Bottem		Name:	. \	Name	Received By
AMEC Project Manager—Cliff Whitmus (cliff.whitmus@amecfw.com pl 425-921-4023)	h	G o√ ·	y Maxne		
AMEC Laboratory Coordinator—Crystal Neirby (crystal.neirby@amecfw.com_ph. 206-838-8469)	•		12-15	Date:	HAN 3/2/10
Sediment samples in 1-L glass jars are unhomogenized. Samples must be thoroughly homogenized before analysis. Dioxin (8-oz Amales is homogenized)		Time:	619	Time:	IING

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Data Validation Report

cari@saylerdata.com

## **DATA VALIDATION REPORT**

Boeing Plant 2– Long Term Post Construction Monitoring Samples, February and March, 2015

Prepared for: AMEC Foster Wheeler 3500 188th Street SW, Ste 601 Lynnwood, WA 98037-4763

September 4, 2015

### 1.0 Introduction

Data validation was performed on the following sediment samples:

	T	1		
Sample ID	Sample	Lab ID	Analyses	
•	Date/Time		, and the second	
SD-PCM01715	02/24/15 09:13	ZX62A	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM00715	02/24/15 09:42	ZX62B	PCBs, Metals, SV, SVSIM, TOC, TS, Grain size	
SD-PCM02315	02/24/15 10:16	ZX62C	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM22315	02/24/15 10:30	ZX62D	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM00815	02/24/15 10:51	ZX62E	PCBs, Metals, SV, SVSIM, Dioxin/Furan, TOC, TS	
SD-PCM02415	02/24/15 11:11	ZX62F	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM01815	02/24/15 11:32	ZX62G	PCBs, Metals, SV, SVSIM, TOC, TS, Grain size	
SD-PCM21815	02/24/15 11:46	ZX62H	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM02915	02/24/15 13:00	ZX62I	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM02815	02/24/15 14:44	ZX62J	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM01915	02/24/15 15:01	ZX62K	PCBs, Metals, SV, SVSIM, Dioxin/Furan, TOC, TS	
SD-PCM02715	02/25/15 09:49	ZX78A	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM03015	02/25/15 10:24	ZX78B	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM00915	02/25/15 10:45	ZX78C	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM01615	03/10/15 10:03	ZZ74A	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM00615	03/10/15 10:22	ZZ74B	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM20615	03/10/15 10:36	ZZ74C	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM02615	03/10/15 10:56	ZZ74D	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM02215	03/10/15 11:15	ZZ74E	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM00515	03/10/15 12:46	ZZ74F	PCBs, Metals, SV, SVSIM, TOC, TS, Grain size	
SD-PCM01415	03/10/15 13:05	ZZ74G	PCBs, Metals, SV, SVSIM, TOC, TS, Grain size	
SD-PCM00215	03/10/15 13:23	ZZ74H	PCBs, Metals, SV, SVSIM, TOC, TS, Grain size	
SD-PCM01115	03/10/15 13:41	ZZ74I	PCBs, Metals, SV, SVSIM, TOC, TS, Grain size	
SD-PCM01315	03/10/15 14:12	ZZ74J	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM01515	03/11/15 08:49	ZZ79A	PCBs, Metals, SV, SVSIM, Dioxin/Furan, TOC, TS	
SD-PCM00415	03/11/15 09:10	ZZ79B	PCBs, Metals, SV, SVSIM, Dioxin/Furan, TOC, TS	
SD-PCM00315	03/11/15 09:25	ZZ79C	PCBs, Metals, SV, SVSIM, TOC, TS	
SD-PCM01215	03/11/15 09:44	ZZ79D	PCBs, Metals, SV, SVSIM, TOC, TS	

Sample ID	Sample Date/Time	Lab ID	Analyses
SD-PCM21215	03/11/15 09:56	ZZ79E	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM00115	03/11/15 10:09	ZZ79F	PCBs, Metals, SV, SVSIM, Dioxin/Furan, TOC, TS
SD-PCM02115	03/11/15 10:30	ZZ79G	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM02015	03/11/15 10:47	ZZ79H	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM02515	03/11/15 11:26	ZZ79I	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM01015	03/11/15 11:39	ZZ79J	PCBs, Metals, SV, SVSIM, Dioxin/Furan, TOC, TS
SD-PCM03215	03/12/15 13:00	AA03A	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM03115	03/12/15 13:20	AA03B	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM03315	03/12/15 12:45	AA03C	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM03615	03/12/15 15:19	AA03D	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM03515	03/12/15 15:32	AA03E	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM03415	03/12/15 15:44	AA03F	PCBs, Metals, SV, SVSIM, TOC, TS
SD-PCM00615 RX	03/10/15 10:22	AJD7A	SV, SIM (2,4-Dimethylphenol)
SD-PCM20615 RX	03/10/15 10:36	AJD7B	SV, SIM (2,4-Dimethylphenol)
SD-PCM01915 RX	02/24/15 15:01	AJD7C	SV, SIM (2,4-Dimethylphenol & Benzyl Alcohol)
SD-PCM03215 RX	03/12/15 13:00	AJD7D	SV, SIM (Benzyl Alcohol)
SD-PCM03115 RX	03/12/15 13:20	AJD7E	SV, SIM (Benzyl Alcohol)
SD-PCM03315 RX	03/12/15 12:45	AJD7F	SV, SIM (Benzyl Alcohol)
SD-PCM03615 RX	03/12/15 15:19	AJD7G	SV, SIM (Benzyl Alcohol)
SD-PCM03515 RX	03/12/15 15:32	AJD7H	SV, SIM (Benzyl Alcohol)
SD-PCM03415 RX	03/12/15 15:44	AJD7I	SV, SIM (Benzyl Alcohol)

Grain size analyses were performed by Materials Testing & Consulting, Inc. Remaining analyses were performed by Analytical Resources, Inc. in Tukwila, Washington.

<u>Validation</u>: A full validation was performed on the dioxin/furan analyses. A summary validation was performed on the remaining analyses. Validation was performed by Cari Sayler. Data qualifiers are summarized in section 9.0 of this report.

Analytical methods: Table 1 and table 2 of the QAPP specify the following analytical methods:

Analysis	Method
Polychorinated Biphenyls	EPA 8082 with 3665B/3660B cleanups
Metals(except mercury)	EPA 6010
Mercury	EPA 7471A
Semivolatile Organics	EPA 8270D
Semivolatile Organics (SIM)	EPA 8270D SIM
Dioxins/Furans	EPA 1613B
Total Organic Carbon	EPA 9060
Total Solids	EPA 160.1
Grain size	Not specified

These methods were used with the following exceptions: The most recent version of the methods for PCB (8082A) and ICP metals (6010C) were used. Arsenic was analyzed by method 200.8. Total Organic Carbon (TOC) analyses were performed by Plumb, 1981, and Total solids analyses were performed by EPA method 2540G. Grain size analysis was performed by method PSEP. These are considered acceptable substitutions. Additionally, PCB cleanups included silica gel in addition to the specified sulfur and acid cleanups.

<u>Sample Receipt:</u> Sample chain-of-custodies and sample log-in documentation were reviewed. All requested analyses were performed.

The cooler receipt temperature in SDG AA03/AJD7 was 11.7 °C. However, the samples were received within hours of being collected and had insufficient time to cool. The remaining sample receipt temperatures were within the target range of 2 to 6°C.

Sample number transcription: Sample IDs in the electronic data deliverable (EDD) were compared to the chain-of-custody for each sample. Sample IDs matched the chain of custody with one exception: Sample SD-PCM00915 was reported in the laboratory hardcopy and EDD as SP-PCM00915. The correct sampleID is used throughout this report.

EDD updates: Edits were required to update the EDDs to correct errors in the control limits and the SIM results for sample SD-PCM02715 (ZX78A). The hardcopy report was correct in both cases.

### 2.0 PCB Analyses

Quality control analysis frequencies: The QAPP specifies that the following quality control samples be analyzed one per analytical batch or one per twenty samples, whichever is more frequent: method blank, and laboratory control sample (LCS). A matrix spike (MS) and MS duplicate (MSD) must be analyzed one per twenty samples and a regional reference material (RRM) must be analyzed one per fifty samples. In addition, surrogate compounds must be measured in each field and quality control sample. These frequencies were met.

Field quality control sample requirements include field duplicates at a 10% frequency. This frequency was met.

Holding times: Refrigerated sediment samples must be extracted within 14 days of collection. Frozen sediment samples must be extracted within 1 year of collection. Extracts must be analyzed within 40 days of extraction. These holding times were met.

Instrument calibration: Data usability criteria for calibrations include minimum correlation coefficients (R<sup>2</sup>) of 0.990 or maximum RSDs of ±20% for each initial calibration, and maximum % differences of +25% for each continuing calibration. These criteria were met.

Laboratory blank results: Criteria for blanks are that analyte concentrations must be below the RL, or below 10% of the lowest associated sample concentration. Contamination was detected in one method blank at a level below the RL as follows:

Blank ID	Analyte	Concentration (ug/kg)	RL (ug/kg)
ZX78 MB	Aroclor 1254	3.8J	4.0

Aroclor 1254 was not detected in the associated samples and no qualifiers are required.

Surrogate recoveries: QAPP control limits were 34-141%. Surrogate recoveries were within QAPP and laboratory control limits.

LCS recoveries: QAPP control limits were 37-116%. LCS recoveries were within QAPP and laboratory control limits.

RRM recoveries: RRM Aroclor 1260 result was 130 ug/kg, within the advisory limits of 38-167%.

MS recoveries: QAPP control limits were 37-116%. MS recoveries were within QAPP and laboratory control limits.

MS/MSD RPDs: QAPP control limits were 50%. RPDs were within QAPP and laboratory control limits.

<u>Field duplicate variability:</u> Field duplicate RPDs were below 50% where the concentrations were above five times the reporting limit. Field duplicate concentrations were within +/- two times the reporting limit where concentrations were at or below five times the reporting limit.

<u>Laboratory flags:</u> Various results are flagged Y to indicate elevated reporting limits. These results are qualified "UY" to clarify that the Aroclor was not detected. Various results were flagged P to indicate the dual column RPD exceeded 40%. These results are qualified as estimated.

Reporting limits: RLs for various aroclors were elevated above 20 ug/Kg due to chromatographic overlap with other aroclors and/or non-target analytes. These samples also contained detected aroclors and the impact on the total PCB value was minimal. No qualifiers are assigned on the basis of elevated reporting limits.

Overall assessment: Documentation was found to be clear and complete. Calibration data demonstrate acceptable instrument performance. Blank, surrogate, LCS, and SRM and MS/MSD and field duplicate results demonstrate acceptable accuracy and precision. Two results were estimated due to dual column variability.

PCB data are acceptable for use as qualified.

### 3.0 Metals Analyses

<u>Quality control analysis frequencies:</u> The QAPP specifies that the following quality control samples be analyzed one per analytical batch or one per twenty samples, whichever is more frequent: method blank, and laboratory control sample (LCS). A matrix spike (MS) and laboratory duplicate must be analyzed one per twenty samples. These frequencies were met.

Field quality control sample requirements include field duplicates at a 10% frequency. This frequency was met.

<u>Holding times:</u> Total or dissolved mercury samples must be analyzed within 28 days of collection. Other metals samples must be analyzed within 180 days of collection. These criteria were met.

<u>Instrument calibration:</u> Functional guidelines criteria for calibration verifications is a maximum % difference of ±10% for ICP metals and ±15% for mercury. QAPP criterion for calibration verifications is ±10% for ICP metals and ±20% for mercury. Criteria for calibration blanks are that analyte concentrations must be between the negative RL and the positive RL. Functional guidelines criterion for detection limit standard recovery is 70-130%, and the QAPP specifies this standard must be within one RL of the true value. These criteria were met.

<u>Laboratory blank results:</u> The criterion for method blanks is that analyte concentrations must be below the PQL, or below 10% of the lowest associated sample concentration. This criterion was met.

<u>LCS recoveries:</u> QAPP control limits were 80-120%. LCS recoveries were within QAPP and laboratory control limits.

<u>SRM recoveries:</u> SRM concentrations were within the advisory range.

MS recoveries: QAPP control limits were 75-125% for ICP metals and 80-120% for mercury. Functional guidelines criteria for both ICP metals and mercury are 75-125%. The MS recoveries were within QAPP and laboratory control limits.

<u>Laboratory duplicate RPDs:</u> QAPP control limits were <20%. For duplicates with concentrations above five times the reporting limit, RPDs were within QAPP and laboratory control limits with the following exceptions:

QC ID	Analyte	RPD	Lab Control Limit
SD-PCM01715 LR	Chromium	37.5	20
SD-PCM01715 LR	Zinc	23.7	20
SD-PCM01515 LR	Chromium	21.1	20
SD-PCM02715 LR	Arsenic	48.6	20
SD-PCM01615 LR	Chromium	21.0	20

These analytes are qualified as estimated in the native sample.

For sample/duplicate pairs with concentrations below five times the reporting limit, absolute differences were within the reporting limit.

<u>Field duplicate variability:</u> Field duplicate RPDs were below 20% where the concentrations were above five times the reporting limit with the following exceptions:

FD ID	Analyte	FD Result (mg/kg)	Sample Result (mg/kg)	RPD
SD-PCM21215 / SD-PCM01215	Arsenic	1.6	2.3	35.9
SD-PCM21815 / SD-PCM01815	Arsenic	3.1	5.7	59.1
SD-PCM20615 / SD-PCM00615	Chromium	20.7	16.2	24.4
SD-PCM21815 / SD-PCM01815	Chromium	18.2	23.9	27.1

These analytes are qualified as estimated in the field duplicates and parent samples.

Field duplicate concentrations were within +/- two times the reporting limit where concentrations were at or below five times the reporting limit.

<u>Reporting limits</u>: Some RLs were elevated above QAPP levels due to dry weight calculation or sample dilution:

Analyte	Highest Reported RL (mg/kg)	QAPP specified RL (mg/kg)	SMS SQS (mg/kg)
Cadmium	1.0	0.2	5.1
Silver	2	0.3	6.1
Mercury	0.030	0.025	0.41

Each elevated RL was below the screening level and the impact on data use is minimal. No qualifiers are assigned on the basis of elevated reporting limits.

<u>Overall assessment:</u> Documentation was found to be clear and complete. Calibration data demonstrate acceptable instrument performance. Method blank, LCS, SRM and MS results demonstrate acceptable laboratory accuracy. Results were estimated based on lab and field duplicate variability.

Metals data are acceptable for use as qualified.

### 4.0 Semivolatile Organic Analyses

Quality control analysis frequencies: The QAPP specifies that the following quality control samples be analyzed one per analytical batch or one per twenty samples, whichever is more frequent: method blank, and laboratory control sample (LCS). A matrix spike (MS) and MS duplicate (MSD) must be analyzed one per twenty samples. In addition, surrogate compounds must be measured in each field and quality control sample. Field quality control sample requirements include field duplicates at a 10% frequency. These frequencies were met.

<u>Holding times:</u> Refrigerated sediment samples must be extracted within 14 days of collection. Frozen sediment samples must be extracted within 1 year of collection. Extracts must be analyzed within 40 days of extraction. These holding times were met.

<u>Instrument calibration</u>: The current functional guidelines criteria include maximum relative standard deviations (RSDs) of  $\pm 40\%$  for poor performers and  $\pm 20\%$  for the remaining compounds in the initial calibration, and maximum % differences of  $\pm 40\%$  for poor performers and  $\pm 25\%$  for the remaining compounds in the continuing calibration. Additionally, the QAPP specifies maximum relative standard deviations (RSDs) of  $\pm 20\%$  for the initial calibration,  $\pm 20\%$  for each CCC continuing calibration compound, and  $\pm 40\%$  for other continuing calibration compounds.

Method 8270D recommends minimum relative response factors (RRF) between 0.01 and 0.9 for various compounds, but allows low responses for non-critical target analytes. The QAPP specifies a minimum RRF of 0.050 for SPCC compounds and 0.010 for other compounds. The current functional guideline specifies minimum RRFs of 0.010 for poor performers and 0.050 for the remaining compounds.

Initial calibration RSDs were below 20%. Continuing calibration % differences were within  $\pm 20\%$  with the following exceptions:

SDG	Standard	Analyte	% Difference
ZX78	03/18/15 02:12:00 PM	2,4,6-Tribromophenol	37.1
ZX78	03/18/15 02:12:00 PM	d5-Phenol	-24.5
ZX78	03/18/15 02:12:00 PM	Di-n-butylphthalate	25.8
ZX78	03/18/15 02:12:00 PM	n-Nitrosodiphenylamine	-24.7
ZX78	03/18/15 02:48:00 PM	Hexachlorobutadiene	25
ZX62	03/21/15 03:38:00 PM	Benzoic Acid	66.1
ZX62	03/21/15 03:38:00 PM	Pentachlorophenol	40.4
ZX62	03/23/15 03:52:00 PM	Benzyl alcohol	42.4
ZX62	03/23/15 03:52:00 PM	Butylbenzylphthalate	26.1
ZX62	03/23/15 03:52:00 PM	Pentachlorophenol	65.6
ZZ74/ZZ79	04/01/15 01:29:00 PM	Benzoic Acid	38.8
ZZ74/ZZ79	04/01/15 01:29:00 PM	d5-Nitrobenzene	21.7
ZZ74/ZZ79	04/01/15 02:05:00 PM	Benzyl alcohol	30.3
ZZ74/ZZ79	04/01/15 02:05:00 PM	Butylbenzylphthalate	20.7

SDG	Standard	Analyte	% Difference
ZZ74/ZZ79/AA03	04/02/15 01:20:00 PM	Benzoic Acid	32.2
ZZ74/ZZ79/AA03	04/02/15 01:55:00 PM	Butylbenzylphthalate	20.7
ZZ74/ZZ79/AA03	04/02/15 01:55:00 PM	Pentachlorophenol	-23.4
AA03	04/04/15 03:06:00 PM	Benzoic Acid	40.3

Negative percent differences represent a low response in the continuing calibrations. Positive and non-detect results associated with the negative % differences are qualified as estimated. Positive results associated with the positive % difference are qualified as estimated and the non-detects are considered unaffected.

RRFs for continuing calibration second order quantitations were not reported and could not be reviewed. RRFs in the initial calibration and the remaining RRFs in the continuing calibration were above 0.050.

<u>Laboratory blank results:</u> Criteria for blanks are that analyte concentrations must be below the RL, or below 10% of the lowest associated sample concentration. The following contamination was detected in the method blank:

Blank ID	Analyte	Concentration (ug/kg)	RL (ug/kg)
ZX62MB	Phenol	23	20
ZX78MB	Diethylphthalate	29	20

Associated sample results below five times this level should be considered not detected, and are qualified "U". Associated sample results between five and ten times the blank level are qualified as estimated. Associated sample results above ten times the blank level are considered unaffected.

<u>Surrogate recoveries:</u> QAPP control limits were 30-160%. Laboratory control limits ranged from 24-134 to 37-120%. Surrogate recovery evaluation is based on the more up-to-date laboratory control limits. Surrogate recoveries were within laboratory limits with the following exceptions:

Sample ID	Surrogate	% Recovery	Lab Control Limit
SD-PCM00115	2-Fluorophenol	21.2	27 - 120
SD-PCM00115	2,4,6-Tribromophenol	15.2	24 - 134
SD-PCM00115	d4-2-Chlorophenol	30.7	31 - 120
SD-PCM00215	2-Fluorophenol	24.5	27 - 120
SD-PCM00215	2,4,6-Tribromophenol	14.7	24 - 134
SD-PCM00315	2-Fluorophenol	10.1	27 - 120
SD-PCM00315	2,4,6-Tribromophenol	8.9	24 - 134
SD-PCM00315	d4-2-Chlorophenol	18.9	31 - 120
SD-PCM00415	2-Fluorophenol	9.6	27 - 120
SD-PCM00415	2,4,6-Tribromophenol	6.8	24 - 134
SD-PCM00415	d4-2-Chlorophenol	16.1	31 - 120
SD-PCM00515	2,4,6-Tribromophenol	11.1	24 - 134
SD-PCM00615	2-Fluorophenol	24.7	27 - 120
SD-PCM00615	2,4,6-Tribromophenol	17.2	24 - 134
SD-PCM00815	2-Fluorophenol	22.7	27 - 120
SD-PCM00815	2,4,6-Tribromophenol	19.7	24 - 134
SD-PCM00815	d4-2-Chlorophenol	30.0	31 - 120
SD-PCM01015	2-Fluorophenol	19.2	27 - 120
SD-PCM01015	2,4,6-Tribromophenol	15.2	24 - 134

Sample ID	Surrogate	% Recovery	Lab Control Limit
SD-PCM01015	d4-2-Chlorophenol	27.6	31 - 120
SD-PCM01115	2-Fluorophenol	24.5	27 - 120
SD-PCM01115	2,4,6-Tribromophenol	14.9	24 - 134
SD-PCM01215	2-Fluorophenol	10.3	27 - 120
SD-PCM01215	2,4,6-Tribromophenol	5.1	24 - 134
SD-PCM01215	d4-2-Chlorophenol	18.0	31 - 120
SD-PCM01315	2,4,6-Tribromophenol	19.2	24 – 134
SD-PCM01515	2,4,6-Tribromophenol	21.5	24 – 134
SD-PCM01815	2-Fluorophenol	22.5	27 - 120
SD-PCM01815	2,4,6-Tribromophenol	11.9	24 - 134
SD-PCM01915	2,4,6-Tribromophenol	2.4	24 - 134
SD-PCM01915 MS	2,4,6-Tribromophenol	22.0	24 - 134
SD-PCM02115	2,4,6-Tribromophenol	21.6	24 - 134
SD-PCM02515	2-Fluorophenol	17.3	27 - 120
SD-PCM02515	2,4,6-Tribromophenol	12.8	24 - 134
SD-PCM02515	d4-2-Chlorophenol	25.6	31 - 120
SD-PCM02615	2,4,6-Tribromophenol	22.9	24 - 134
SD-PCM02815	2,4,6-Tribromophenol	3.2	24 - 134
SD-PCM02915	2-Fluorophenol	18.7	27 - 120
SD-PCM02915	2,4,6-Tribromophenol	4.3	24 - 134
SD-PCM02915	d4-2-Chlorophenol	28.5	31 - 120
SD-PCM03315	d5-Phenol	28.8	29 - 120
SD-PCM21215	2-Fluorophenol	11.7	27 - 120
SD-PCM21215	2,4,6-Tribromophenol	10.1	24 - 134
SD-PCM21215	d4-2-Chlorophenol	20.1	31 - 120
SD-PCM22315	2,4,6-Tribromophenol	23.6	24 - 134
ZX78LCS	2,4,6-Tribromophenol	137	24 – 134
SD-PCM03215 RX	d14-p-Terphenyl	24.8	37 - 120
AJD7LCSD	2,4,6-Tribromophenol	144	24 - 134

Both individual recoveries and average recoveries of acid surrogates were evaluated. Where only one of the four acid surrogates is outside of limits, no qualifiers are assigned. No qualifiers are added to samples on the basis of high or low recoveries in the associated QC Samples. No base neutral compounds were reported in the re-extracted sample and no qualifiers are required. For the remaining samples, both non-detect and detected results for acid compounds are qualified as estimated and base/neutral compounds are considered unaffected.

<u>LCS recoveries:</u> QAPP control limits were 30-160%. Laboratory control limits ranged from 10-120 to 53-120%. Recovery evaluation is based on the more up-to-date laboratory control limits. LCS recoveries were within laboratory control limits with the following exceptions:

QC ID	Analyte	% Recovery	Lab Control Limit
AA03LCS	Benzyl Alcohol	3.6	19 - 120
AA03LCSD	Benzoic Acid	127	10 - 120
AA03LCSD	Benzyl Alcohol	3.6	19 - 120
ZX62LCS	Benzoic Acid	135	10 - 120
ZX62LCSD	Benzoic Acid	138	10 - 120

Compounds with very low recoveries (below 10%) are rejected as unusable in the associated samples. Compounds with high recoveries are qualified as estimated in the associated samples for detected results only.

<u>LCS/LCSD RPDs:</u> RPDs were within the laboratory 30% control limit with the following exception:

QC ID	Analyte	RPD	Lab Control Limit
ZX62LCSD	Benzyl Alcohol	32.4	30
AJD7LCSD	2,4-Dimethylphenol	39.8	30

Positive results for these analytes are qualified as estimated in the associated samples.

MS recoveries: QAPP control limits were 30-160%. Laboratory control limits ranged from 10-120 to 53-120%. Recovery evaluation is based on the more up-to-date laboratory control limits. MS recoveries were within these limits with the following exceptions:

QC ID	Analyte	% Recovery	Lab Control Limit
SD-PCM01915 MS	2,4-Dimethylphenol	0.0	10 – 120
SD-PCM01915 MSD	2,4-Dimethylphenol	0.0	10 – 120
SD-PCM01915 MS	2-Methylphenol	26.4	28 – 120
SD-PCM01915 MS	Benzyl Alcohol	3.2	19 – 120
SD-PCM01915 MSD	Benzyl Alcohol	3.0	19 – 120
SD-PCM20615 MS	2,4-Dimethylphenol	4.2	10 – 120
SD-PCM20615 MSD	2,4-Dimethylphenol	3.0	10 – 120
SD-PCM01915 RX MSD	Benzyl Alcohol	15.4	19 - 120

The 2,4-Dimethylphenol and Benzyl alcohol results in sample SD-PCM01915 and the 2,4-Dimethylphenol result in field duplicate SD-PCM20615 and its parent sample SD-PCM00615 are rejected as unusable.

The Benzyl Alcohol result in SD-PCM01915 RX is qualified as estimated. 2-Methylphenol result in SD-PCM01915 was rejected in favor of the SIM result, and no further qualification is required.

MS/MSD RPDs: RPDs were within the QAPP limit of 40% and the laboratory control limit of 30% with the following exceptions:

QC ID	Analyte	RPD	Lab Control Limit
SD-PCM20615 MSD	2,4-Dimethylphenol	33.4	30
SD-PCM20615 MSD	Benzyl Alcohol	80.4	30
SD-PCM01915 RX MSD	2,4-Dimethylphenol	37.5	30
SD-PCM01915 RX MSD	Benzyl Alcohol	35.0	30

2,4-Dimethylphenol result in sample SD-PCM20615 was rejected due to very low MS/MSD recoveries and no further qualification is required. The remaining results were not detected in the parent sample, and no qualifiers are required.

<u>Field duplicate variability:</u> Field duplicate RPDs were below 50% where the concentrations were above five times the reporting limit. Field duplicate concentrations were within +/- two times the reporting limit where concentrations were at or below five times the reporting limit.

<u>Multiple reported results:</u> The analytes reported in the 8270D analysis had some overlap with the analytes reported in the 8270D SIM analyses. These results were compared and reduced to a single reportable result. Unless quality control results warrant the rejection of one result, multiple reported results are evaluated according to the following guidelines

- (1) If both results are non-detects, the lower reporting limit was selected.
- (2) If one result was not detected and the other detected, the detection was selected.
- (3) If both results were detections, the following additional criteria were applied:
  - (a) If one result was off-scale and one was on-scale, the on-scale result was selected.
  - (b) If associated QC results indicated high bias, the lower concentration result was selected.
  - (c) If associated QC results indicated no, low, or mixed biases, the higher concentration result was selected.

This approach is conservative, and is considered most protective of the environment. The results not selected as the best result to report are qualified R2, rejected due to the availability of another result.

<u>Laboratory flags:</u> No additional qualifiers were assigned based on an evaluation of the laboratory flags.

Reporting limits: Some RLs were elevated above QAPP levels as follows:

Analyte	Highest Reported RL (ug/kg)	QAPP specified RL (ug/kg)	SMS SQS (ug/kg)
Bis(2-ethylhexyl)phthalate	50	5	1300
Diethylphthalate	76	5	200
Total Benzofluoranthenes	40	20	3200

Each elevated RL was below the screening level and the impact on data use is minimal. No qualifiers are assigned on the basis of elevated reporting limits.

<u>Overall assessment:</u> Documentation was found to be clear and complete. Results were estimated due to continuing calibration results, blank contamination, and surrogate, LCS and MS accuracy. Rejected results for benzyl alcohol and 2,4-dimethylphenol were replaced by acceptable or estimated re-extraction results.

Except for data replaced by another analysis, semivolatile organic data are acceptable for use as qualified.

### 5.0 Semivolatile Organic Selective Ion Monitoring (SIM) Analyses

Quality control analysis frequencies: The QAPP specifies that the following quality control samples be analyzed one per analytical batch or one per twenty samples, whichever is more frequent: method blank, and laboratory control sample (LCS). A matrix spike (MS) and MS duplicate (MSD) must be analyzed one per twenty samples. In addition, surrogate compounds must be measured in each field and quality control sample. Field quality control sample requirements include field duplicates at a 10% frequency.

These frequencies were met.

<u>Holding times:</u> Refrigerated sediment samples must be extracted within 14 days of collection. Frozen sediment samples must be extracted within 1 year of collection. Extracts must be analyzed within 40 days of extraction. These holding times were met.

<u>Instrument calibration:</u> The current functional guidelines criteria include maximum relative standard deviations (RSDs) of +40% for poor performers and +20% for the remaining

compounds in the initial calibration, and maximum % differences of  $\pm 40\%$  for poor performers and  $\pm 25\%$  for the remaining compounds in the continuing calibration. Additionally, the QAPP specifies maximum relative standard deviations (RSDs) of  $\pm 20\%$  for the initial calibration,  $\pm 20\%$  for each CCC continuing calibration compound and  $\pm 40\%$  for other continuing calibration compounds.

Method 8270D recommends minimum relative response factors (RRF) between 0.01 and 0.9 for various compounds, but allows low responses for non-critical target analytes. The QAPP specifies a minimum RRF of 0.050 for SPCC compounds and 0.010 for other compounds. The current functional guideline specifies minimum RRFs of 0.010 for poor performers and 0.050 for the remaining compounds.

Initial calibration RSDs were below 20%. Continuing calibration % differences were within  $\pm 20\%$  with the following exceptions:

SDG	Standard	Analyte	% Difference
ZX62	03/23/15 15:52	Benzyl alcohol	42.4
ZX62	03/23/15 15:52	Pentachlorophenol	65.6
ZX62	03/23/15 15:52	Butylbenzylphthalate	26.1
ZX78	03/18/15 14:48	Hexachlorobutadiene	25.0
ZZ74/ZZ79	04/01/15 14:05	Benzyl alcohol	30.3
ZZ74/ZZ79	04/01/15 14:05	Butylbenzylphthalate	20.7
ZZ74/ZZ79/AA03	04/02/15 13:55	Pentachlorophenol	-23.4
ZZ74/ZZ79/AA03	04/02/15 13:55	Butylbenzylphthalate	20.7
ZX62	03/23/15 15:52	Benzyl alcohol	42.4
ZX62	03/23/15 15:52	Pentachlorophenol	65.6
ZX62	03/23/15 15:52	Butylbenzylphthalate	26.1
ZX78	03/18/15 14:48	Hexachlorobutadiene	25.0
ZZ74/ZZ79	04/01/15 14:05	Benzyl alcohol	30.3
ZZ74/ZZ79	04/01/15 14:05	Butylbenzylphthalate	20.7
ZZ74/ZZ79/AA03	04/02/15 13:55	Pentachlorophenol	-23.4
ZZ74/ZZ79/AA03	04/02/15 13:55	Butylbenzylphthalate	20.7

Negative percent differences represent a low response in the continuing calibrations. Positive and non-detect results associated with the negative % differences are qualified as estimated. Positive results associated with the positive % difference are qualified as estimated and the non-detects are considered unaffected.

RRFs for continuing calibration second order quantitations were not reported and could not be reviewed. RRFs in the initial calibration and the remaining RRFs in the continuing calibration were above 0.050.

<u>Laboratory blank results:</u> Criteria for blanks are that analyte concentrations must be below the RL, or below 10% of the lowest associated sample concentration. No contamination was detected in the method blanks.

<u>Surrogate recoveries:</u> Laboratory control limits ranged from 27-100 to 37-120%. Recovery evaluation is based on the more up-to-date laboratory control limits. Surrogate recoveries were within the laboratory limits with the following exception:

Sample ID	Surrogate	% Recovery	Lab Control Limit
SD-PCM00115	2-Fluorophenol	21.5	27 - 120
SD-PCM00215	2-Fluorophenol	25.3	27 - 120

Sample ID	Surrogate	% Recovery	Lab Control Limit
SD-PCM00315	2-Fluorophenol	11.1	27 - 120
SD-PCM00415	2-Fluorophenol	9.5	27 - 120
SD-PCM00615	2-Fluorophenol	26.8	27 - 120
SD-PCM00815	2-Fluorophenol	23.7	27 - 120
SD-PCM01015	2-Fluorophenol	19.6	27 - 120
SD-PCM01115	2-Fluorophenol	25.9	27 - 120
SD-PCM01215	2-Fluorophenol	10.9	27 - 120
SD-PCM01815	2-Fluorophenol	22.8	27 - 120
SD-PCM02515	2-Fluorophenol	16.8	27 - 120
SD-PCM02915	2-Fluorophenol	20.9	27 - 120
SD-PCM21215	2-Fluorophenol	13.3	27 – 120
SD-PCM03215 RX	d14-p-Terphenyl	19.6	37 - 120

The results for acid compounds in the samples with low 2-Fluorophenol recoveries are qualified as estimated and base-neutral compounds are considered unaffected. No base neutral compounds were reported in the re-extracted sample and no qualifiers are required.

<u>LCS recoveries:</u> QAPP control limits were 30-160%. Laboratory control limits ranged from 10-120 to 38-120%. Recovery evaluation is based on the more up-to-date laboratory control limits. LCS recoveries were within the laboratory limits with the following exceptions:

QC ID	Analyte	% Recovery	Lab Control Limit
AA03LCS	Benzyl Alcohol	2.8	25 – 123
AA03LCSD	Benzyl Alcohol	3.0	25 – 123

Benzyl Alcohol results in the associated samples are rejected as unusable.

<u>LCS/LCSD RPDs:</u> RPDs were within the laboratory 30% control limit with the following exception:

QC ID	Analyte	RPD	Lab Control Limit
ZX62LCSD	Benzyl Alcohol	70.0	30
AJD7LCSD	2,4-Dimethylphenol	36.1	30

The associated benzyl alcohol results have been qualified based on the very low LCS and LCSD recoveries, and no further qualification is required. The associated 2,4-Dimethylphenol results are qualified as estimated.

MS recoveries: QAPP control limits were 30-160%. Laboratory control limits ranged from 10 - 120 to 38-120%. Recovery evaluation is based on the more up-to-date laboratory control limits. MS recoveries were within the laboratory limits with the following exceptions:

QC ID	Analyte	% Recovery	Lab Control Limit
SD-PCM01915 MS	2,4-Dimethylphenol	0	10 - 120
SD-PCM01915 MSD	2,4-Dimethylphenol	0	10 - 120
SD-PCM20615 MS	2,4-Dimethylphenol	4.1	10 - 120
SD-PCM20615 MSD	2,4-Dimethylphenol	3.4	10 - 120
SD-PCM01915 MS	Benzyl Alcohol	2.9	25 - 123
SD-PCM01915 MSD	Benzyl Alcohol	2.5	25 – 123
SD-PCM01915 RX MS	Benzyl Alcohol	20.1	25 - 123
SD-PCM01915 RX MSD	Benzyl Alcohol	13.7	25 - 123

The 2,4-Dimethylphenol and Benzyl alcohol results in sample SD-PCM01915 and the 2,4-Dimethylphenol result in field duplicate SD-PCM20615 and its parent sample SD-PCM00615 are rejected as unusable. The Benzyl Alcohol result in SD-PCM01915 RX was rejected in favor of the 8270D result, and no further qualification is required.

MS/MSD RPDs: RPDs were within the QAPP limit of 40% and the laboratory control limit of 30% with one exception:

QC ID	Analyte	RPD	Lab Control Limit
SD-PCM20615 MSD	Benzyl Alcohol	109	30
SD-PCM01915 RX MSD	2,4-Dimethylphenol	41.9	30
SD-PCM01915 RX MSD	Benzyl Alcohol	38.0	30

Positive results in the associated samples are qualified as estimated.

<u>Field duplicate variability:</u> Field duplicate RPDs were below 50% where the concentrations were above five times the reporting limit. Field duplicate concentrations were within +/- two times the reporting limit where concentrations were at or below five times the reporting limit.

<u>Multiple reported results:</u> The analytes reported in the 8270D analysis had some overlap with the analytes reported in the 8270D SIM analyses. These results were compared and reduced to a single reportable result. Results are evaluated according to the guidelines listed in section 4.0 above.

<u>Laboratory flags</u>: One 2-methylphenol result was flagged 'M' by the laboratory indicating a poor spectral match. The corresponding validation qualifier, 'N' for presumed present, is assigned. One benzyl alcohol result was flagged Y to indicate an elevated reporting limit. This result is qualified "UY" to clarify that the compound was not detected.

Reporting limits: Various RLs were elevated above QAPP levels:

Analyte	Highest Reported RL (ug/kg)	QAPP specified RL (ug/kg)	SMS SQS (ug/kg)
2,4-Dimethylphenol	25	20	29
Benzyl Alcohol	22	20	57

Reporting limits were below screening levels and the impact on data use is minimal. No qualifiers are assigned on the basis of elevated reporting limits.

<u>Overall assessment:</u> Documentation was found to be clear and complete. The majority of results were accepted without qualification. Some results were estimated due to calibration results or surrogate or matrix spike recoveries. Rejected results for benzyl alcohol and 2,4-dimethylphenol were replaced by acceptable or estimated re-extraction results. One result was qualified as presumed present due to poor spectral match.

Except for data replaced by another analysis, semivolatile SIM organic data are acceptable for use as qualified.

### 6.0 Dioxin/Furan Analyses

<u>Quality control analysis frequencies:</u> The method specifies that method blank and ongoing precision and recovery (OPR) samples must be analyzed with each batch. In addition, carbon-13 labeled isotope dilution standards and a chlorine-37 labeled cleanup standard must be measured in each field and quality control sample. These criteria were met.

<u>Analysis holding times:</u> Method 1613B specifies a 40 day holding time between extraction and analysis, but does not specify a holding time from sampling to extraction for sediments. Functional guidelines recommends analysis holding times of one year, if frozen. These holding times were met.

<u>System performance checks:</u> The tune must demonstrate a resolving power >10,000 at m/z 304.9825. In addition, the window defining mix must meet relative retention criteria and demonstrate a valley <25% for all peaks near 2,3,7,8-TCDD and 2,3,7,8-TCDF. These criteria were met.

Instrument calibration: Initial calibration criteria include 1) maximum percent relative standard deviations (%RSD) of ≤20% for unlabeled compounds with an isotopically labeled analog and ≤35% for 1,2,3,7,8,9-HxCDD, OCDF, and labeled compounds, 2) Ion abundance ratios must be within  $\pm$  15% of theoretical, and 3) signal to noise ratios must be above 10. Continuing calibration criteria include 1) maximum percent differences (%D) between the initial calibration and the continuing calibration of ≤20% for unlabeled compounds with an isotopically labeled analog and ≤35% for 1,2,3,7,8,9-HxCDD, OCDF, and labeled compounds, 2) Ion abundance ratios must be within  $\pm$  15% of theoretical, and 3) signal to noise ratios must be above 10 . These criteria were met.

<u>Laboratory blank results:</u> Method 1613B states that the method blank must not contain any 2,3,7,8-substituted CDD/CDF or potentially interfering compound at greater than the minimum level or one-third the regulatory compliance level, whichever is greater. This criterion was met. However, all method blank contamination is evaluated for its impact on the reported sample results.

The following compounds were detected in the method blank:

Blank ID	Analyte	Concentration (pg/g)	RL (pg/g)
ZX62MB	1,2,3,6,7,8-HxCDD	0.046J	1.00
ZZ79MB	OCDD	4	2.00
ZX62MB	2,3,7,8-TCDF	0.044J	1.00
ZX62MB	1,2,3,6,7,8-HxCDF	0.154J	1.00
ZX62MB	1,2,3,7,8,9-HxCDF	0.082J	1.00
ZX62MB	1,2,3,4,6,7,8-HpCDD	1.6	1.00
ZX62MB	Total HpCDD	4.64	2.00
ZX62MB	OCDD	8.66	2.00
ZZ79MB	2,3,4,7,8-PeCDF	0.054J	1.00
ZZ79MB	1,2,3,6,7,8-HxCDF	0.05J	1.00
ZZ79MB	1,2,3,7,8,9-HxCDF	0.086J	1.00
ZZ79MB	1,2,3,4,6,7,8-HpCDF	0.066J	1.00
ZZ79MB	Total HpCDF	0.0656	2.00
ZZ79MB	1,2,3,6,7,8-HxCDD	0.044J	1.00

Concentrations of these analytes in associated samples which were below 5 times the blank

concentration are qualified 'U' and should be considered not detected at the reported value. Concentrations of these analytes in associated samples which were between 5 and 10 times the blank concentration are qualified as estimated. Concentrations above 5 times the blank concentration are considered unaffected.

The following compounds were reported with estimated maximum possible concentrations in the method blank:

Blank ID	Analyte	Concentration (pg/g)	RL (pg/g)
ZZ79MB	1,2,3,4,6,7,8-HpCDD	0.69 JEMPC	1.00
ZZ79MB	Total HpCDD	1.8 EMPC	2.00
ZX62MB	Total TCDF	1.48 EMPC	1.00
ZX62MB	Total PeCDD	0.0686 EMPC	1.00
ZX62MB	1,2,3,4,7,8-HxCDF	0.128 JEMPC	1.00
ZX62MB	2,3,4,6,7,8-HxCDF	0.098 JEMPC	1.00
ZX62MB	Total HxCDF	1.46 EMPC	2.00
ZX62MB	Total HxCDD	1.46 EMPC	2.00
ZX62MB	1,2,3,4,6,7,8-HpCDF	0.202 JEMPC	1.00
ZX62MB	1,2,3,4,7,8,9-HpCDF	0.028 JEMPC	1.00
ZX62MB	Total HpCDF	0.427 EMPC	2.00
ZX62MB	Total TCDD	0.0696 EMPC	1.00
ZX62MB	1,2,3,7,8-PeCDF	0.152 JEMPC	1.00
ZX62MB	Total PeCDF	0.54 EMPC	2.00
ZZ79MB	Total TCDD	0.0492 EMPC	1.00
ZZ79MB	Total PeCDF	0.8 EMPC	2.00
ZZ79MB	1,2,3,4,7,8-HxCDF	0.06 JEMPC	1.00
ZZ79MB	2,3,4,6,7,8-HxCDF	0.044 JEMPC	1.00
ZZ79MB	Total HxCDF	0.533 EMPC	2.00
ZZ79MB	Total HxCDD	0.446 EMPC	2.00
ZZ79MB	Total TCDF	0.753 EMPC	1.00

Associated detected sample results within five times these levels are qualified as estimated.

 $\underline{C_{13}}$  labeled isotope dilution standard recoveries: Isotope dilution standard recoveries were within laboratory control limits.

<u>Cl<sub>37</sub> labeled cleanup standard recoveries:</u> Cleanup standard recoveries were within laboratory control limits.

OPR recoveries: OPR recoveries were within laboratory control limits.

<u>Compound Identification</u>: Method criteria for compound identification include: 1) The signals of the characteristic ions must maximize within the same 2 seconds. 2) The signal to noise ratio must be greater than 2.5. 3) Ion abundance ratios must be within  $\pm$  15% of theoretical, or within  $\pm$ 10% of the calibration verification standard. 4) The relative retention times must be within the RT Window. 5) Interferences from polychlorinated diphenyl ether compounds must be evaluated.

These criteria were reviewed for each target analyte in the six samples. Where compounds did not meet ion abundance ratio requirements, the lab appropriately flagged the results as estimated maximum possible concentrations (EMPCs). No discrepancies were noted.

<u>Compound Quantitation:</u> Sample concentrations were recalculated to verify sample quantitations. No discrepancies were noted.

<u>Second column confirmation:</u> Second column confirmation was not required to separate of 2,3,7,8-TCDF from other TCDF isomers due to the use of RTX Dioxin-2 Column.

<u>Estimated detection limits:</u> Estimated detection limits (EDLs) were recalculated to verify quantitations. No discrepancies were noted. All EDLs met QAPP target reporting limits.

<u>Toxicity equivalent quantity (TEQ):</u> Functional guidelines indicates that two TEQs should be calculated: One with EMPCs and EDLs included at their full reported value and one excluding EDLs and EMPCs. However, DMMP guidance indicates that different TEQs should be calculated: One with EMPCs and EDLs included at half their reported value and one excluding EDLs and EMPCs.

Recalculation of the TEQ was performed as follows:

Sample ID	TEQ-1	TEQ-1/2	TEQ-0	
SD-PCM00115	0.293	0.157	0.0209	
SD-PCM00415	0.320	0.173	0.0261	
SD-PCM00815	0.109	0.0563	0.0031	
SD-PCM01015	0.393	0.231	0.0692	
SD-PCM01515	0.184	0.0991	0.0141	
SD-PCM01915	0.280	0.143	0.00608	

#### Where:

TEQ-1 = TEQ with 2005 WHO TEFs including full values of both EDLs and EMPCs. TEQ- $\frac{1}{2}$  = TEQ with 2005 WHO TEFs including  $\frac{1}{2}$  values of both EDLs and EMPCs.

TEQ-0 = TEQ with 2005 WHO TEFs excluding EDLs and EMPCs.

<u>Laboratory flags:</u> The laboratory appropriately flagged concentrations and EMPCs below the low standard as estimated "J". No further qualification was necessary.

Overall assessment: Documentation was found to be clear and complete. No discrepancies were noted in analyte identification or result quantitation. Calibration data and system performance checks demonstrate acceptable instrument performance. Quality control results indicate acceptable accuracy. Blank contamination resulted in estimated concentrations and elevated but acceptable reporting limits.

Dioxin/furan data are acceptable for use as qualified.

### 7.0 General Chemistry Analyses

<u>Quality control analysis frequencies:</u> For total organic carbon, a method blank, SRM, LCS, MS, and a laboratory triplicate were analyzed in each batch. For total solids, each batch included a method blank, and laboratory triplicate, although one of the laboratory triplicates was from a non-project sample. Quality control samples were sufficient to evaluate overall precision and accuracy as appropriate for the method.

Field quality control sample requirements include field duplicates at a 10% frequency. This frequency was met.

<u>Holding times:</u> Holding times are as follows:

Analysis	Holding time if refrigerated	Holding time if frozen
TOC	28 days	6 months
Total Solids	14 days	6 months

Samples were analyzed within the holding times.

Instrument calibration: Instrument calibration criteria are as follows:

Analysis	Criteria
TOC	Initial calibration R <sup>2</sup> > 0.990 Continuing calibration recovery within 90-110%
Total Solids	Calibration mass within + 0.1 g

These criteria were met.

<u>Laboratory blank results:</u> Criteria for method blanks are that analyte concentrations must be below the PQL, or below 10% of the lowest associated sample concentration. This criterion was met for all method blanks.

LCS recoveries: Control limits were 75-125% for TOC. These criteria were met.

<u>SRM results:</u> Control limits were 80-120% for TOC. These criteria were met.

MS recoveries: Control limits were 75-125% for TOC. These criteria were met.

<u>Laboratory triplicate results</u>: Control limits were 20% for TOC and total solids. These criteria were met with the following exception:

QC ID	Analyte	RSD	Lab Control Limit
SD-PCM01615 LT	Total Organic Carbon	32.1	20.0
SD-PCM01715 LT	Total Organic Carbon	32.4	20.0

The total organic carbon results are qualified as estimated in native samples.

<u>Field duplicate variability:</u> Field duplicate RPDs were below 25% where the concentrations were above five times the reporting limit. Field duplicate concentrations were within +/- two times the reporting limit where concentrations were at or below five times the reporting limit with one exception:

FD ID	Analyte	FD Result (%)	Sample Result (%)	RL
SD-PCM21815 / SD-PCM01815	Total Organic Carbon	0.187	0.059	0.020

This analyte is qualified as estimated in the field duplicate and parent sample.

<u>Overall assessment:</u> Documentation was found to be clear and complete. Calibration data indicate acceptable performance. Method blank, LCS, SRM, and MS results demonstrate acceptable laboratory accuracy. Data were estimated based on laboratory triplicate and field duplicate variability.

General chemistry results are acceptable for use as qualified.

## 8.0 Grain Size Analyses

<u>Quality control analysis frequencies:</u> This batch included a laboratory triplicate, meeting frequency requirements.

<u>Holding times:</u> Sediment samples must be analyzed within 6 months of collection. Samples were analyzed within the holding time.

<u>Laboratory triplicate RSDs:</u> Triplicate RSDs were within 20%.

Grain size data are acceptable for use as reported.

### 9.0 Qualifier Summary Table

Client ID	Analyte(s)	Qualifier	Reason	
Polychorinated Biphenyl Analyses				
SD-PCM02015	Aroclor 1242	UY	Clarification of Y flag	
SD-PCM02015	Aroclor 1254	J	High dual column RPD	
SD-PCM03115	Aroclor 1254	UY	Clarification of Y flag	
SD-PCM03215	Aroclor 1260	J	High dual column RPD	
SD-PCM03215	Aroclor 1248	UY	Clarification of Y flag	
SD-PCM03415	Aroclor 1254	UY	Clarification of Y flag	
SD-PCM03515	Aroclor 1254	UY	Clarification of Y flag	
SD-PCM03615	Aroclor 1254	UY	Clarification of Y flag	
Metals Analyses				
SD-PCM00615	Chromium	J	High FD RPD	
SD-PCM01215	Arsenic	J	High FD RPD	
SD-PCM01515	Chromium	J	High lab duplicate RPD	
SD-PCM01615	Chromium	J	High lab duplicate RPD	
SD-PCM01715	Chromium, Zinc	J	High lab duplicate RPD	
SD-PCM01815	Arsenic, Chromium	J	High FD RPD	
SD-PCM02715	Arsenic	J	High lab duplicate RPD	
SD-PCM20615	Chromium	J	High FD RPD	
SD-PCM21215	Arsenic	J	High FD RPD	
SD-PCM21815	Arsenic, Chromium	J	High FD RPD	
Semivolatile Ana				
SD-PCM00115	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method	
SD-PCM00115	4-Methylphenol, Benzoic Acid, Phenol	UJ	Low surrogate recovery	
SD-PCM00215	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method	
SD-PCM00215	4-Methylphenol, Benzoic Acid, Phenol	UJ	Low surrogate recovery	

Client ID	Analyte(s)	Qualifier	Reason
SD-PCM00315	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM00315	4-Methylphenol, Benzoic Acid, Phenol	UJ	Low average surrogate recovery
SD-PCM00415	Diethylphthalate	J	Low surrogate recovery
SD-PCM00415	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM00415	4-Methylphenol, Benzoic Acid, Benzyl Alcohol, Phenol	UJ	Low average surrogate recovery
SD-PCM00515	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM00615	2,4-Dimethylphenol	R,R1	Very low MS and MSD recoveries
SD-PCM00615	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM00615	4-Methylphenol, Benzoic Acid, Phenol	UJ	Low surrogate recovery
SD-PCM00615 RX	2,4-Dimethylphenol	R2	Result available from another method
SD-PCM00715	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM00815	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM00815	4-Methylphenol, Benzoic Acid, Phenol	UJ	Low surrogate recovery
SD-PCM00915	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM00915	Diethylphthalate	U	Blank Contamination

Client ID	Analyte(s)	Qualifier	Reason
SD-PCM01015	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM01015	4-Methylphenol, Benzoic Acid, Benzyl Alcohol, Phenol	UJ	Low surrogate recovery
SD-PCM01115	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM01115	4-Methylphenol, Benzoic Acid, Benzyl Alcohol, Phenol	UJ	Low surrogate recovery
SD-PCM01215	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM01215	4-Methylphenol, Benzoic Acid, Phenol	UJ	Low average surrogate recovery
SD-PCM01315	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM01415	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM01515	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM01615	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM01715	Benzoic Acid	J	High LCS and LCSD recoveries, High CCV
SD-PCM01715	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method

SD-PCM01815  1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3- Dichlorobenzene, 1,4-Dichlorobenzene, 2,4- Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-  Result availab another metho	
Nitrosodiphenylamine, Pentachlorophenol	od
SD-PCM01815 4-Methylphenol, Benzoic Acid, Benzyl Alcohol, Phenol UJ Low surrogate	
SD-PCM01915 2,4-Dimethylphenol, Benzyl Alcohol R,R1 Very low MS a recoveries	and MSD
SD-PCM01915  1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol  1,2,4-Trichlorobenzene, 1,3-Dichlorobenzene, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	-
SD-PCM01915 RX 2,4-Dimethylphenol R2 Result availab another metho	
SD-PCM01915 RX Benzyl Alcohol UJ Low MSD reco	overy
SD-PCM02015 Benzoic Acid J High CCV	
SD-PCM02015  1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol  1,2,4-Trichlorobenzene, 1,3-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Dibenz(a,h)Anthracene, another method a	
SD-PCM02115  1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	
SD-PCM02215  1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3- Dichlorobenzene, 1,4-Dichlorobenzene, 2,4- Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N- Nitrosodiphenylamine, Pentachlorophenol  1,2,4-Trichlorobenzene, 1,3- Dichlorobenzene, 1,4-Dichlorobenzene, 2,4- Dimethylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, 1,3- Dichlorobenzene, 1,4-Dichlorobenzene, 1,3- Dichlorobenzene, 2,4- Dimethylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, 1,4-Dichlorobenzene, 2,4- Dimethylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, 1,4-Dichlorobenzene, 2,4- Dimethylphenol, Policy	
1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3- Dichlorobenzene, 1,4-Dichlorobenzene, 2,4- Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol  1,2,4-Trichlorobenzene, 1,3- Dichlorobenzene, 2,4- Dimethylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	
SD-PCM02415  1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3- Dichlorobenzene, 1,4-Dichlorobenzene, 2,4- Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-  Result availab another methor	-
Nitrosodiphenylamine, Pentachlorophenol	
SD-PCM02515    Nitrosodiphenylamine, Pentachlorophenol   1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol   R2   Result availab another method	

Client ID	Analyte(s)	Qualifier	Reason
SD-PCM02615	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM02715	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM02715	Diethylphthalate	U	Blank Contamination
SD-PCM02815	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM02915	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM02915	4-Methylphenol, Benzoic Acid, Phenol	UJ	Low average surrogate recovery
SD-PCM03015	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM03015	Diethylphthalate	U	Blank Contamination
SD-PCM03115	Benzoic Acid	J	High LCSD recovery, High CCV
SD-PCM03115	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03115	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM03215	Benzoic Acid	J	High LCSD recovery, High CCV
SD-PCM03215	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03215	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM03215 RX	Benzyl Alcohol	R2	Result available from another method
SD-PCM03315	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries

Client ID	Analyte(s)	Qualifier	Reason
SD-PCM03315	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM03415	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03415	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM03515	Benzoic Acid	J	High LCSD recovery
SD-PCM03515	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03515	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM03615	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03615	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM20615	2,4-Dimethylphenol	R,R1	Very low MS and MSD recoveries, highMS/MSD RPD
SD-PCM20615	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM20615 RX	2,4-Dimethylphenol	R2	Result available from another method
SD-PCM21215	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM21215	4-Methylphenol, Benzoic Acid, Benzyl Alcohol, Phenol	UJ	Low surrogate recovery
SD-PCM21815	Benzoic Acid	J	High LCS and LCSD recoveries, High CCV
SD-PCM21815	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method

Client ID	Analyte(s)	Qualifier	Reason
SD-PCM22315	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, Butylbenzylphthalate, Dibenz(a,h)Anthracene, Dimethylphthalate, Hexachlorobenzene, Hexachlorobutadiene, N-Nitrosodiphenylamine, Pentachlorophenol	R2	Result available from another method
SD-PCM22315	Phenol	U	Blank Contamination
Semivolatile Org	anic Selective Ion Monitoring (SIM) Analyses	1	1
SD-PCM00115	2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM00215	2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM00315	2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM00415	2,4-Dimethylphenol, 2-Methylphenol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM00415	Benzyl Alcohol	R2	Result available from another method
SD-PCM00515	Benzyl Alcohol	R2	Result available from another method
SD-PCM00515	Butylbenzylphthalate	J	High CCV
SD-PCM00515	Pentachlorophenol	UJ	Low CCV
SD-PCM00615	2,4-Dimethylphenol	R,R1	Very low MS and MSD recoveries
SD-PCM00615	2-Methylphenol, Benzyl Alcohol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM00715	Benzyl Alcohol	R2	Result available from another method
SD-PCM00715	Butylbenzylphthalate	J	High CCV
SD-PCM00815	2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM01015	2,4-Dimethylphenol, 2-Methylphenol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM01015	Benzyl Alcohol	R2	Result available from another method
SD-PCM01115	2,4-Dimethylphenol, 2-Methylphenol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM01115	Benzyl Alcohol	R2	Result available from another method
SD-PCM01215	2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM01315	Benzyl Alcohol	R2	Result available from another method
SD-PCM01515	Benzyl Alcohol	R2	Result available from another method
SD-PCM01615	Butylbenzylphthalate	J	High CCV
SD-PCM01715	Benzyl Alcohol	R2	Result available from another method
SD-PCM01715	Butylbenzylphthalate	J	High CCV
SD-PCM01815	2,4-Dimethylphenol, 2-Methylphenol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM01815	Benzyl Alcohol	R2	Result available from another method
SD-PCM01915	2,4-Dimethylphenol, Benzyl Alcohol	R,R1	Very low MS and MSD recoveries
SD-PCM01915	Butylbenzylphthalate	J	High CCV
SD-PCM01915 RX	Benzyl Alcohol	R2	Result available from another method
SD-PCM02015	Benzyl Alcohol, Butylbenzylphthalate	R2	Result available from another method
SD-PCM02015	Pentachlorophenol	J	Low CCV
SD-PCM02115	Benzyl Alcohol	R2	Result available from another method
SD-PCM02115	Pentachlorophenol	UJ	Low CCV

Client ID	Analyte(s)	Qualifier	Reason
SD-PCM02215	Benzyl Alcohol	R2	Result available from another method
SD-PCM02315	Butylbenzylphthalate	J	High CCV
SD-PCM02415	Benzyl Alcohol	R2	Result available from another method
SD-PCM02515	2,4-Dimethylphenol, 2-Methylphenol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM02515	Benzyl Alcohol	R2	Result available from another method
SD-PCM02615	Butylbenzylphthalate	J	High CCV
SD-PCM02715	Benzyl Alcohol	R2	Result available from another method
SD-PCM02815	Benzyl Alcohol	R2	Result available from another method
SD-PCM02915	2,4-Dimethylphenol, 2-Methylphenol, Benzyl Alcohol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM03015	Benzyl Alcohol	R2	Result available from another method
SD-PCM03115	2-Methylphenol	N	Poor spectral match
SD-PCM03115	Benzyl Alcohol	R,R1	Very low LCS and
SD-PCM03115	Pentachlorophenol	UJ	LCSD recoveries Low CCV
SD-PCM03115 RX	Benzyl Alcohol	R2	Result available from another method
SD-PCM03215	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03215	Butylbenzylphthalate	J	High CCV
SD-PCM03215	Pentachlorophenol	J	Low CCV
SD-PCM03315	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03315	Pentachlorophenol	UJ	Low CCV
SD-PCM03315 RX	Benzyl Alcohol	R2	Result available from another method
SD-PCM03415	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03415 RX	Benzyl Alcohol	R2	Result available from another method
SD-PCM03515	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03515	Pentachlorophenol	UJ	Low CCV
SD-PCM03515 RX	Benzyl Alcohol	R2	Result available from another method
SD-PCM03615	Benzyl Alcohol	R,R1	Very low LCS and LCSD recoveries
SD-PCM03615	Pentachlorophenol	UJ	Low CCV
SD-PCM03615 RX	Benzyl Alcohol	R2	Result available from another method
SD-PCM20615	2,4-Dimethylphenol	R,R1	Very low MS and MSD recoveries
SD-PCM20615	Benzyl Alcohol	R2	Result available from another method
SD-PCM21215	2,4-Dimethylphenol, 2-Methylphenol, Pentachlorophenol	UJ	Low surrogate recovery
SD-PCM21215	Benzyl Alcohol	R2	Result available from another method
SD-PCM21815	Benzyl Alcohol	R2	Result available from another method
SD-PCM22315	Benzyl Alcohol	R2	Result available from another method
SD-PCM22315	Butylbenzylphthalate	J	High CCV

Client ID	Analyte(s)	Qualifier	Reason
Dioxin/Furan Analyses			
SD-PCM00115		J	Blank Contamination
SD-PCM00115	1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, Total HpCDD, Total HxCDD, Total HxCDF, Total PeCDF, Total TCDF	J	Blank EMPC results
SD-PCM00115	1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9- HxCDF, OCDD	U	Blank Contamination
SD-PCM00415	Total HpCDF	J	Blank Contamination
SD-PCM00415	1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, Total HpCDD, Total HxCDD, Total HxCDF, Total PeCDF, Total TCDF	J	Blank EMPC results
SD-PCM00415	1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,7,8-PeCDF, OCDD	U	Blank Contamination
SD-PCM00815	1,2,3,4,6,7,8-HpCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9- HxCDF, OCDD, Total HpCDD	U	Blank Contamination
SD-PCM00815	1,2,3,4,6,7,8-HpCDF, 1,2,3,7,8-PeCDF, 2,3,4,6,7,8-HxCDF, Total HpCDF, Total HxCDD, Total HxCDF, Total PeCDF, Total TCDF	J	Blank EMPC results
SD-PCM01015	1,2,3,6,7,8-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9- HxCDF, 2,3,4,7,8-PeCDF	U	Blank Contamination
SD-PCM01015	OCDD	J	Blank Contamination
SD-PCM01015	1,2,3,4,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, Total HxCDF, Total PeCDF, Total TCDF	J	Blank EMPC results
SD-PCM01515	1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, Total HpCDD, Total HxCDD, Total HxCDF, Total PeCDF, Total TCDF	J	Blank EMPC results
SD-PCM01515	1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,7,8-PeCDF, OCDD	U	Blank Contamination
SD-PCM01915	1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,7,8-PeCDF, Total HpCDF, Total HxCDD, Total HxCDF, Total PeCDF, Total TCDF	J	Blank EMPC results
SD-PCM01915	1,2,3,4,6,7,8-HpCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, OCDD, Total HpCDD	U	Blank Contamination
General Chemistry Analyses			
SD-PCM01615	Total Organic Carbon	J	High lab triplicate RPD
SD-PCM01715	Total Organic Carbon	J	High lab triplicate RPD
SD-PCM01815	Total Organic Carbon	J	High FD Difference
SD-PCM21815	Total Organic Carbon	J	High FD Difference

## 10.0 Abbreviations and Definitions

DV Qualifier	Definition
U	The material was analyzed for, but was not detected above the level of the associated value.
UY	The reporting limit was elevated due to chromatographic overlap with related compounds. The material was analyzed for, but was not detected above the level of the associated value.
J	The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification.
UJ	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample result is rejected. The presence or absence of the analyte cannot be verified and data are not usable.

DV Qualifier Definition

R1 This sample result has been rejected in favor of a more accurate, precise or

conservative result. The other result should be used.

R2 This sample result has been rejected in favor of a more accurate, precise or

conservative result from another analytical method. The other result should

be used.

<u>Abbreviation</u> <u>Definition</u>

ARI Analytical Resources, Inc.

DV Data validation

LCS Laboratory control sample

LCSD Laboratory control sample duplicate

EDL Estimated detection limit

EMPC Estimated maximum possible concentration

MS Matrix spike

MSD Matrix spike duplicate

NA Not Applicable RL Reporting limit

RPD Relative percent difference
RRM Regional reference material
RSD Relative standard deviations
SRM Standard reference material

### 11.0 References

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- Method 1613B: Tetra through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS, US Environmental Protection Agency, Office of Water Engineering and Analysis Division, October 1994.
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